Serranidae

1,2 Serranus louti
3 " sexmaculatus
4 " urodelus
5 " leopardus
6 " guttatus
7 " fasciatus
8,9 " hexagonatus
10 " socialis
11,12,13 " tauvina
14 " hoedtii
15 " sp.
16,17 Plectropoma maculatum
18 Grammistes orientalis
19 " punctatus
20 Mesoprion macdor
21,22 " bengalensis
23,24 " gibbus
25 " marginatus
26 " bohar
27 " monostigma (fig. missing)
28 " garretti
29 " semicinctus
30 " sp.
31,32 Aprion virescens
33 Aphareus furcatus
34 Etelis sp.
35 Bowersia ulaula
36,37 Priacanthus carolinus
38 " sp.
39 Apogon frenatus

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40 Apogon fasciatus
41 " maculiferus
42 " orbicularis
43 Chilodipterus quinquelineatus
44,45 Dules marginatus
46 " argenteus
47 Therapon servus
48 Diagramma punctatissimum
49 " pica
50 " lessonii
51 " obscurum
52 Serres gigas
53 " sp.
54 Scolopsis trilineatus
55 Pentapus aurolineatus
56,57 Caesio tile
58 " argenteus

Squamipinnes

59 Chaetodon striangulus
60 " setifer
61 " ephippium (fig. missing)
62 " semeion
63 " unimaculatus
64 " bennettii
65 " quadrimaculatus
66 " ornatissimus
67 " fremblii
68 " falcula
69 " collaris
70 " trichrous
71 " vittatus
72,73 " lunula

74 Chaetodon vagabundus
75 " pelewensis
76 " multicinctus
77 " rafflesii
78 " mertensii
79 " lineolatus
80 " miliaris
81 " citrinellus
82 " strigatus
83 Chelmo longirostris
84 Heniochus macrolepidotus
85, 86 " monoceros
87 " chrysostomus
88 Holacanthus diacanthus
89 " bifrenatus
90 " cyanotis
91 " loriculus
92 " imperator
93 " nicobariensis

Mullidae

94 Mulloides flavolineatus
95 Upeneus barberinus
96 " trifasciatus
97, 98 " cyclostomus

Sparidae

99 Lethrinus moensii
100 " ramak
101 " mahsena
102 " sp.
103 Sphaerodon grandoculis
104 Pinjalepterus fuscus

Cirrhitidae

105 Cirrhites forsteri
106 " hemistictus
107 " pdystictus
108, 109 " arcatus
110 " maculatus
111 " melanotus
112 " cinctus
113 " binacula
114 " ? oxyrhynchus
115 Chilodactylus vittatus

Scorpaenidae

116 Scorpaena guamensis
117 " parvipinnis
118 " cookii
119 " cirrhosa
120 " sp.
121 " sp.
122 " sp.
123 " sp.
124 Pterois volitans
125 " radiata
126 Taeniandus triacanthus
127 " garretti
128 Synanceia verrucosa
129 Microptus maculatus
130 " unipinna

Nandidae

131 Plesiops corallicola

Teuthididae

132 Teuthis striolata
133 " rostrata
134, 135 " spp.

Berycidae

136 Myripristis murdjan
137 " adustus (fig. missing)
138 " lima
139 Holocentrum sp.
140 " microstoma
141 " erythraeum
142 " samara
143 " operculare

Pempheridae

144 Pempheris mangula

Polynemidae

145 Polynemus sexfilis

Trichiuridae

146 Lepidopus sp.
147, 148 Thyrsites prometheus

Acanthuridae

149 Acanthurus triostegus
150 " guttatus
151 " blochii
152 " lineatus
153 " dussumieri
154 " lineolatus
155 " olivaceus
156 " gahm
157 " glaucopareius
158 " celebicus
159 " achilles
160 " hepatus
161 " strigosus
162, 163 " flavescens (M. S. Swanlng)
164 " rostratus

165 Naseus unicornis
166,167 " brevirostris
168 " Vlamingii
169 " lituratus
170,171 " sp.

Carangidae

172 Caranx rottleri
173 " sanctae helenae
174 " crumenophthalmus
175 " ascensionis
176 " melampygus
177,178,179,180 " ferdau
181, 182 " gallus
183, 184 " ciliaris
185 " sp.
186 Seriola dumerilii
187 Seriolichthys bipinnulatus
188 Naucrates ductor
189 Chorinemus sancti-petri
190 Trachynotus bailloni
191 Psettus argenteus
192,193 Platax orbicularis
194 Zanclus cornutus
195 Anomalops palpebratus
196 Equula fasciata

Coryphaenidae

197 Coryphaena equisetis

Scombridae

198 Scomber kanagurta
199 Thynnus thunnina
200 " pelamys
201 Acanthocybium solandri

202 Cybium sp.
203 Echeneis naucrates
204 " remora

Chiasmodontidae

205 Chiasmodon sp.

Trachinidae

206 Percis tetracanthus

Malacanthidae

207 Malacanthus hoedtii

Pediculati

208 Antennarius marmoratus
209–216 " commersonii
217, 218 " bigibbus
219 " sp.

Dactylopteridae

220 Dactylopterus orientalis

Sobriidae

221 Sobrius genivittatus
222 " ophopomus
223 " albopunctatus
224 " semidoliatus
225 " phalaena
226–230 " spp.
231 Euctenogobrius ophthalmonema
232 Sicydium albotaeniatum
233 " sp.
234, 235 Eleotris semipunctata
236 " godeffroyi
237 " fusca
238 " strigata

Blenniidae

239 Petroscirtes taeniatus
240 " filamentosus
241 " alter
242 " sp.
243 Salarias tridactylus
244 " sebae
245 " sp.
246 " periophthalmus
247 " sp.
248 " gibbifrons
249 " quadricornis
250 " edentulus
251 " marmoratus

Sphyraenidae

252 Sphyraena forsteri
253 " obtusata
254-256 " spp.

Mugilidae

257 Mugil waigiensis
258 " axillaris
259 " compressus
260 " crenilabris
261 " sp.
262 Myxus leuciscus

Fistulariidae

263, 264 Aulostoma chinense

Pomacentridae

265, 266 Amphiprion ephippium
267 Pomacentrus sclopsis
268 " littoralis
269 " sp.
270 ? Glyphidodon pavo

271 Glyphidodon septemfasciatus
272,273 " saxatilis
274 " brownriggii
275 " sp.
276 Dascyllus aruanus (fig. missing)
277,278 " trimaculatus
279 " sp.
280-284 Heliastes lepidurus
285 ~~Cossyphus~~

Labridae

285 Cossyphus axillaris
286,287 " bilunulatus
288 " modestus
289 Labroides dimidiatus
290 Chilinus trilobatus
291 " chlorurus
292 " undulatus
293 " fasciatus
294 " radiatus
295 " hexagonatus
296 Pseudochilinus hexataenia
297 " octotaenia
298 " evanidus
299,300 Epibulus insidiator
301 Anampses coeruleopunctatus
302 " curreri
303,304 " diadematus
305 " geoffroyi
306 Stethojulis axillaris
307 " casturi
308 " albovittata
309 Macropharyngodon geoffroyi
310 " meleagris

311 Platyglossus hortulanus
312 " kawarin
313 " vicinus
314 " notopsis
315 " marginatus
316 " ornatissimus
317 Coris venusta
318 " " (fig. missing)
319,320 " pulcherrima
321 " leponis
322 " cingulum
323,324 " annulata ♀♀
325 " greenovii
326 " flavovittata
327,328 Chilio inermis
329 " sp.
330 Novacula sp.
331 " taeniurus
332 " pavo
333 Julis lunaris
334 " whitmii
335,336 " duperreyi
337 " purpurea
338 " fusca
339 " umbrostigma
340 " guentheri
341 " dorsalis
342 " melanochir
343 " sp.
344 " amblycephala
345 Somphoxus tricolor

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Scaridae

346 Callyodon genistriatus
347 " sandvicensis
348 Pseudoscarus garretti
349 " globiceps
350 " orbiceps
351 " rostratus
352 " forsteri
353 " microrhinus
354 " nuchipunctatus
355, 356 " pectoralis
357 " godeffroyi (fig. missing)
358 " altipinnis
359 " brevifilis
360 " abacurus
361–5 " 3 sp.

Ophidiidae

366 Brotula marginalis
367 Dieraspler homei
368 " parvipinnis

Scombresocidae

369 Belone hians
370 Hemirhamphus dussumieri
371 " far
372 " longirostris
373 " depauperatus
374 Exocoetus evolans
375 " sp.

Siluridae

376 Plotosus anguillaris

Scopelidae

377 Saurida gracilis
378 Scopelus sp.

Stomiatidae

379 ?

Clupeidae

380 Engraulis eversmanni
381 " sp.
382 Clupea gibbosa
383 " atricauda
384 " sirm

Albulidae

385 Albula glossodon

Elopidae

386 Elops hawaiensis
387 Megalops cyprinoides

Chanidae

388 Chanos chanos

Muraenidae

389-91 Anguilla 3 sp.
392 Conger marginatus
393 Congromuraena bowersii
394 Ophichthys garretti
395 " crocodilinus
396 " henshawi
397 " colubrinus
398 " maculosus
399 " macrodon
400 " macrops
401 " sp.
402 Moringua sociabilis
403 " microchir
404 " sp.
405-6 Muraena pardalis

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407-9 *Muraena meleagris*
410-2 " *undulata*
413 " *allardicii*
414-6 " *spp.*
417 " *richardsonii*
418 " *sp.*
419-20 " *picta*
421 (*Leptocephalus*)
422 *Muraena thyrsoidea*
423 " *brummeri*
424 " *zebra*
425 " *nebulosa*
426 " *xanthospila*
427 " *amblyodon*
428-30 " *spp.*
431 *Gymnomuraena tigrina*
432 " *polyspila*
433 " *marmorata*
434 " *macrocephala*
435-6 " *spp.*

Syngnathidae

437 *Doryichthys sp.*
438 " *sculptus*
439 *Syngnathus conspicillatus*
440-441 *Hippocampus hystrix*

Sclerodermi

462 *Balistes vidua*
443 " *niger*
444 " *bursa*
445 " *viridescens*
446 " *fuscus*
447 " *flavomarginatus*
448 " *aculeatus*

449 Balistes verrucosus
450 " rectangulus
451-2 " undulatus (no m.55.492.)
453 " erythrodon
454 Monacanthus pardalis
455 " cardae
456 " howensis
457 " scopas
458 " longirostris
459 " spilosoma
460 " sp.
461 " scriptus
462 Ostracion solae
463 " cubicus
464 " punctātus
465 " fornasini
466-9 " cornutus

Gymnodontes

470 Tetradon hypselogenion
471-2 " stellatus
473-5 " hispidus
476 " regani
477 " nigropunctātus
478 " meleagris
479 " solandri
480-1 " spp.
482 Diodon hystrix
483 " Heekeri
484 Chilomycterus lissogenys
485 Orthagoriscus mola

Carchariidae

486 Carcharias melanopterus
487 Triaenodon obesus
488 Zygaena zygaena

Mylobatidae

489 Aetobatis narinari

Genus *Serranus*, — Cuvier.

Body oblong-elongate-oblong, subcylindrical, compressed. Scales strigiform, covering all parts of the head except the snout, and large or less developed the basal portions of the vertical fins. Head large, subconical. Lower jaw the longer. Teeth slender, hooked, closely set, and disposed in bands; the lower jaw with lateral and the upper with a deep oblique gape. Preopercle denticulated, serrated and the opercle with three flat spines. Branchiostegal rays seven. Dorsal fin about equally divided in its three portions which constitute one fin. The hinder portions of the dorsal, anal, ventrals and caudal prolonged more or less into a cirrus. Ventrals under the pectorals behind the posterior. Pectoral acute.

Habits belonging to the genus inhabit the deep bottom outside of the reefs. At certain seasons they are said to be hermaphrodite.

15

1

= S. laetis. fourth.

Serranus regius, Garrett.

B. 7; D. 5–4; A. 3–6; V. 1–5; P. 16; C. 2, 4, 5, 7, 1.

The greatest depth of the body about at the origin of the dorsal fin enters about four times in the total length, while the greatest thickness at the same place equals half the above mentioned depth. The head compressed about a fourth of the entire length, being told as about three in S. regalis. The eye is slightly oval, its upper edge rises slightly elevated above the upper line of profile, and its length entering seven and a half times in the length of the head. The preopercular bone is denticulate. The hinder end of the maxillary extends to a vertical touching the posterior end of the orbit.

The dorsal fin commences at a point immediately above the insertion of the pectoral fins, and extends over a space half the total length of the fish, caudal excluded. The soft part of the fin is angular at about the eleventh soft ray. The anal fin takes its origin opposite to the second soft dorsal ray, and is formed over a base nearly one-

Head as long as the fin above. Mouth
fairly low, its forelimit in a line
forming a thick lip to the snout, forelimb
to the base of the caudal. The dorsal and
anal known out into long slender points.
The caudal is shaped as in L. argyrotis.

Color rich scarlet-red, fading into
orange beneath. Covered large diffuse bl
-ackish spots along the head region and,
in young taken, except the pectoral and ventrals,
dotted with bluish red and violet, which
on the upper front of the body generally
assume irregular longitudinal series.
Sides ruby-red. The soft dorsal, caudal
and pectoral translucent, margined with
orange, and the anal with blackish. The
bottom or keel of the ventral scaly and
-or lake.

Length, 12 to 20 inches.
Habitat— Density Lks. Pimmerton Lks.

Remarks— Common at both the
above localities. Known to the natives as the
Lake Superior "Hiu".

15

Serranus lanti

0 1 2 3 4 5 6 7 8 9 10
cm
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* Forgot to put in this
with the preceding species
and number 5 lots.

Serranus regalis, Garrett.

B. 7; D. 9-12; A. 3; V. 1-5; P. 15, L. l. 1, 2, 3, 4, 5.

The greatest depth is nearly one-third of the entire length, caudal excluded. The length of the head equals the distance from the opercle angle to a point in a vertical with the hinder termination of the dorsal fin. The eyes are of moderate size, being nearly one-seventh of the length of the head. The maxillary reaches slightly posterior to the center of the eye.

The dorsal fin takes its origin a little in advance of the shoulder termination of the opercle. Its soft portion is produced into a pointed lobe which reaches beyond the base of the caudal. The anal has a similar production to the fin above.

Color light cinnamon, with darker shadings; every scale (dotted) with a pinpoint of dusky. Lower extremities yellow. Fins (dotted) like the body and posteriorly margined with yellow. All, except the pectorals, shaded blackish.

Length, 14 inches.

Habitat.—Hongkong?

Remarks.—I have described but the single specimen from which the drawing was made.

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Serranus louti

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cm
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Serranus ocellatus, Günth. 3

Mexico

B. 7; D. 8–9; A. 3–10; L. l. 50; L. tr. 6. 2, 2. 2.

The head comprises about one-third of the length of the fish. A slight depression may be observed on the facial outline. The prominent eyes are large, sub-circular in form, approximating the upper line of profile, and their greatest diameter enters about four and a half times in the length of the head. The preopercle is but feebly denticulate. The hinder corner of the maxillary extends slightly posterior to the orbit. The greatest depth of the body falls a little short of the length of the head. The anal fin is slightly shorter than the soft portion of the dorsal.

Color lively vermillion red, fading along the lower parts, and every where, except the breast, belly, pectorals and ventrals, maculated with small, round blue spots, some of which are encircled with dusky rings. Six large diffuse black spots along the dorsal region, of which two are on the top of the caudal trunk. Obsolete dusky bands descend from the dorsal

maculations as far as the belly. Three blue lines start from the snout and terminate behind the eye, two interrupted by that organ and the lower one touching the lower lip of the orbit. The soft dorsal, anal, caudal, and the anterior border of the ventrals, margined with blue.

Length, 12 inches.

Habitat— Society Isls, Paumotu Isls.

Remarks— This species is not very abundant, and is generally taken in deep water outside the reefs. At the Society Islands its vernacular name is "Paroa toua". Its fine red color and blue spots are characteristic.

Textschrift:

Journal des Museum Godeffroy. Heft III.

Fische der Südsee. Heft I. Taf. 2.

Textschrift:

Serranus sexmaculatus

Instruction für die Zeichner:

die zum Basale der Brustflosse u. die drei der Afterflosse sind viel stärker zu zeichnen als im colorirten Original. Ich habe eine richtige Zeichnung beigefügt, welche zu fabriciren ist. Man bemerke daß die Basale abwechselnd schwächer u. stärker sind.

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Serranus sexmaculatus, Rüpp.

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cm
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4

Mora oreodelus, Forbes

Lepidocephalus oreodelus, Forbes, Ann. & Mag. Nat. Hist., (4) vol. 1, 1868, p. 306.

Diagnosis, Dorsal fin-rays 10, anal rays 5, pectoral fin-rays 11, ventral 6; D. 7-10; A. 5-10; P. 11; V. 6; L. l. ?.

The greatest depth of the body about as in the latter with the origin of the dorsal from opposite one-third of the total length, terminating the caudal fin on the commencement. The greatest thickness taken at the vertex of the head is slightly more than half of the depth just behind the head. The head is thick - the snout of one-third of the entire length of the fish. The eye is rather large, sub-circular in shape, its upper margin about on a line with the upper line of the profile, and its greatest diameter equals about one-sixth of the length of the head. The nostrils are situated nearly midway between the eye and the end of the snout, the anterior border of the eye.

The dorsal fin rises abruptly from the origin of the posterior margin of the posterior simple ray and forms over a base equal to half of the total length of the fish, rounded at the end. The opposing portion of the

- para Early Nov, and at soft part in coupled formation. The anal fin is nearly as long as the soft portion of the dorsal, and is rounded off behind.

Color somewhat variable, generally shining silvery, darker above, paler beneath, or, sooty-olivaceous above and reddish beneath. Sometimes more or less dotted with vermilion. Sides clouded with vermilion and coppery, dorsal sooty-red, traversed by five oblique diffuse white stripes which converge forwardly. Ventrals either uniform shiny-red, or blood-red and more or less blackish externally. Pectorals blackish, passing to orange-red posteriorly, or uniform greenish yellow. The dorsal and anal fins are more or less sooty, each being marked with an interrupted vermilion stripe. The living fish is marked by the vertical broad clouds which entirely disappear in the dead specimen.

Length, 7 to 9 inches.

Habitat—Society Isls, Kingsmill Gp, Navigators Isls, Penrhyn Isls, Low Archipelago Isls.

Remarks—We have collected specimens of this common species at all the above localities except the Low Archipelago Isls. with the Society Islands it becomes the same as "Uaua" and of the Marquesas, "Tautaine."

Serranus uradelus, Bast.

0 1 2 3 4 5 6 7 8 9 10
cm
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Serranus leopardus, Lacépède 5

Merra elegans, Garrett

B. 7; D. 9-11; A. 3-9; V. 1-5; P. 12; C. 2,1,5,7,2.
The greatest depth of the body, which is immediately above the anterior end of the ventrals, is about one-third of the entire length. The greatest thickness is not half the depth just alluded to. The head, though contributing one-third of the fish's length, is comparatively small. The eye is lateral, with the superior border of its orbit, subcircular in shape, and has its greatest diameter equal to one-sixth of the length of the head. The facial line is slightly concave. The border externally of the maxillary reaches a point slightly posterior to a vertical line drawn immediately behind the eye.

The dorsal fin, commences a short distance in advance of the pectoral series, and extends over a base which is a little more than half the length of the fish, caudal excluded. Its soft portion is somewhat concisely separated off. The lower margin of the anal is arched.

The dorsal region light dusky-olive, with a very few pale reddish lunae on the sides and pale grayish brown the terminal portion of the dorsal, ventral and pectoral fins, the adipose fin and the upper portion of small dorsal spots and irregular longitudinal broken lines of dusky-brown-red. The dorsal spots are confined mostly to the head, breast and pectoral fins, though absolute on the caudal. A large spot on the opercular flap and one on the upper portion of the caudal trunk, black. Iris dusky-red. Pectoral orange. Pectoral shaded off with violaceous. The anterior portion of the dorsal is light red; its soft portion, together with the anal and ventral orange, their outer third light-red and edged with dusky. Caudal light reddish, with two elegant diffuse black bands which converge posteriorly.

Length, 6 inches.

Habitat.- Society Isls.

Remark.- Two elegant species so very near at the above location where I obtained two specimens. It may be distinguished from Heros severalus, Gunter, by its more robust form, its concave face and general color. The caudal band are similar in the two species, with the exception of one first having blackness and the latter from them white.

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Serranus Leopardus, Lacep.

0 1 2 3 4 5 6 7 8 9 10
cm
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Serranus guttatus, Bloch

Morra mediaster, Lac. et Val.

Scorpaena mediaster, Lac. et Val., Hist. Nat. des Poiss., Vol. 2, p. 385.

" " Ruffell, Trans., pl. 27, fig. 1.

" " Cuvier, Reg. Animal, Ed. Wright, Fishes, p. 244, pl. 87.

" " Lacep. et Gunn., Reg. Ani. Fishes, Trans., Vol. 1, p. 553, pl. 3, fig. 1.

" " Richardson, Report. Brit. Ass., 1845, p. 223.

B. 7, D. 9-15/2-1. 5-9; K. 1-5; P. 12; C. 13, 1, 5, 7, 1, 2.

The head is one third the length and one-fourth of the total length. The eyes are sub-circular, separated by a space of less than their diameter, and their greatest diameter is about one-seventh of the length of the head. The greatest depth of the body is about one-fourth of the of the total length.

The dorsal fin is rounded off posteriorly, and the anterior part of the anal is angular.

The body is brownish-black, becoming more or less olivaceous on the belly. The young fish exhibits several vertical darker bars on the posterior part of the body which entirely disappears in the dead specimen. Every-where macerated with small brownish

blue, dark margined spots. Shield brown
dotted with blue. The spiny portion of the
dorsal is tipped with orange. The fins
are about the same color and markings
as the body and feelers margined.

Length, 12 inches.

Habitat.—Kingsmill Isls, Society Isls,
Navigators Isls, Penrhyn Isls, Banks Isls, New
Guinea, New Ireland, Australia, Celebes, Red
Sea.

Remarks.— I have collected specimens
of this species at the five first mentioned
localities and give the station on the northern
of Ellice Archipelago. Nowhere else
in Polynesia or in the Zoology of the Voyage of the
"Astrolabe" or Voyage of the "Bonite" or any good except in color,
and shape of the mouth fins, the former
having Nebuleous brown and the latter
too dusk and too much rounded. Rüpp. and
Cuvier and Valenciennes figure in the Zoology of the
"Astrolabe" are not so good as Lesson's, be-
ing badly colored, though the figures
exhibits the fronto-ocular dorsal bars
which Lesson's have not.

24

Serranus guttatus, Bl.

6

0 1 2 3 4 5 6 7 8 9 10
cm
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Serranus fasciatus, Forsk. var. garretti

Nerra 7

B. 7; D. 11-16; A. 3-4; V. 1-5; P. 15; C. 2, 1, 7, 6. 1, 1.

This species is considerably reduced along the back. The head is compressed to the entire length is as one to three. The eyes are oval in shape, their greatest diameter enter-ing five times in the length of the side of the head. The maxillary extends as far back as the hinder border of the eye. The praeopercle bone is but feebly dentated. The dorsal fin takes its ori-gin slightly in advance of the base of the pectorals. The anal is deep and its lower margin is rounded.

Color light red, with fif-teen descending bars, which in the living fish are whitish and quite conspicuous. Everywhere, except the ventrals, en-tire portion of the pectorals, and spiny part of the dorsal, maculated with small irregular dusky blackish spots. The top and middle portion of the head, olivaceous, orange-red beneath, and a diffuse brownish-red band extends from the end of the snout to the opercular corner. Sides silvery, varied with brown

-ish-red. The spiny portion of the dor-
-sal fin is margined above with
blackish brown; the soft portion and
the caudal are margined either with
light sea-green or orange yellow. The
posterior halves of the pectorals, ven
orange yellow.

Length, 10 to 12 inches.

Habitat.—Society Isls, Paumotu
Isls.

Remarks.—A rather common
species, at the former location its
vernacular name is "Tonu". The
drawing represents the eye a trifle
too high and the caudal fin should
be shorter.

Serranus fasciatus, Forsk. var. garretti.

0 1 2 3 4 5 6 7 8 9 10
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Merra hexagonata, Forster 8

Perca hexagonata, Forster
Serranus hexagonatus, Cuv. et Val., Hist. des Poiss., Vol. 2, p. 330.

B. 7; D. 11-16; A. 3-8; V. 1-5; P. 16; C. 2, 1, 7, 6, 1, 2.

The head constitutes nearly a third of the entire length, and there is a decided concave depression on the interocular space. The eyes are of an oval shape, their superior limits even with the superior line of profile, and their greatest diameter about one-fifth the length of the head; they are underlaid near their length distant from the tip of the superior jaw. The greatest depth of the body is contained to the total length of the fish 3 times or more.

The dorsal exhibits but a very slight depression between its spinous and soft portions, which latter, together with the anal are posteriorly rounded off.

Color grayish or greenish gray, closely mottled with rather large polygonal reddish brown spots, which are so crowded as to leave very narrow interspaces of the ground color, which has the appearance of a net-work thrown over the fish. The spots are more remote along the abdomen. Some

have the extended ground color more or less tinged with yellow. The subtriangular spots often seen to touch each other forming a broad band. Sides golden, with brown clouds. On the fins the spots are darker colored, even approaching black towards their extreme margins, where they also diminish in size, and the net-work is generally yellowish with delicate bluish white lines, circlings and dots.

Length 7 to 9 inches.

Habitat— Society Isls, Samoan Is. Harvey Isl, and Kingsmill Isls.

Hernandez name at the former location "Iron"

Remarks— I take this, the commonest species, to be the Perca hexagonata, of Forster. It is closely allied to Serra dorsalis, Bl, but may be at once distinguished by the absence of the large saddle shaped dorsal spot which characterizes the latter species. At all the above mentioned localities I have found this to be the most abundant species.

Serranus hexagonatus; Forst.

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Synonymy incorporated

9

Sterna dorsalis, garrett.

B. 7; D. 11-15; A. 3-5; V. 1-5; P. 16; C. 2,1,7,6,1,2.
The greatest depth of the body taken at the insertion of the ventrals is one-fourth of the total length, caudal excluded. The head, which comprises nearly a third of the fish, is quite full at the interocular space. The eyes are large, longitudinally oval in shape, inserted once their own length from the tip of the upper jaw and their greatest diameter nearly one-fifth of the length of the head.

The general contour of the fish is quite similar to Sterna hexagonata, but there is a deeper depression between the two dorsals.

Color and markings somewhat like Sterna hexagonata, but differs in the fish being smaller and of a more decided red-dish hue, and the pectinated ground color is greenish-yellow, dotted and pen-celled with fragua white. Four large black or blackish transverse saddle-shaped spots along the dorsal region. The maculations on the fins are more or less bright red, with cream-yellow lines and dots in the interspaces of the maculae.

Length 7 to 9 inches

Habitat. - Society Isls, Kingsmill Isls and Harvey Isls.

Separated at Division of the first Section, "Side spaces"

Remarks. — Next to the Mitrum hispaniolae this is the commonest species. The former has the dentate, sinuses to the orbit, the fasciocular margin more crenately serrated and the dorsal commenced a little further back.

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Serranus hexagonatus var.

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Serranus socialis

Murra

10

B. 7; D. 11-15; A. 8-9; V. 1-5; P. 17; C. 2, 7, 7, 2.

A immature specimen of this species was before me, measuring eight inches in length, is more slender than the adult fish. The greatest depth entering four times in the entire length, and the greatest thickness half its depth. The eyes are large, oval in shape, their greatest diameter entering five times in the length of the side of the head, and inserted quite near the upper line of profile. The hinder extremity of the maxillary reaches considerably behind the eye.

Color pale grayish, profusely macu-lated with small deep brown spots, which are more or less confluent. Four large brown-black spots along the back and basal portion of the dorsal fin, and one on the top of the caudal finch. Iris golden, veined with brown. Ventral light gray and spotted like the body, all the other fins deep dusky brown, with darker margins and maculated with white, which, on the spinous portion of the dorsal form two broken longitu

- inal stripes.

Length.—6 feet.

Habitat.—Kingsmill Isls, Lucinda Isls, Hervey Isls, Rarotonga Isls.

Remarks.—A common species, which attains a larger size than any other inhabiting the South Seas. At the Paumotu Islands they often grow

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22

Serranus socialis

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-Synonymy
Seriolus fasciatus
Ute no 149 p 461.

11 Herra elongata, Garrett.

B. 7; D. 11-15; A. 3-5; V. 1-5; P. 19; C. 3,5,7,2.

The general shape of this form is elongated, the head constituting more than a third of the total length.

Color pale carnation or dusky-white, clouded with pale olivaceous, and every where except the soft dorsal, anal and caudal, maculated with round reddish-brown spots. Iris brown. Pectorals amber yellow. The soft dorsal, anal and caudal whitish yellow, gradually becoming blackish towards their extreme margins, which are bordered with white; their whitish yellow grounds are marked with large, close, irregular fainty spots.

Length - 12 inches.

Habitat - Kingsmill Isls.

Remarks - Not common. Its peculiar elongate form and color will at once determine it.

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Serranus tauvina

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Professional Fish
ref no 21 th 461

Hemiramphus

D. 11-11; A. 3-9; C. 1+5; P. 11; V. 1, 5; L. l. 52.

This drawing was made from an example 12 inches in length, which was caught at the Kingsmill Islands, during the cruise of the Alert. Not having any preserved drawing to refer to description and nothing to colour it from, I was fortunate, I did not succeed in getting another specimen.

In the drawing the proportions of the fish, position of eyes, markings, shape and relative proportion of the fins can be noted in describing the species.

Some fish of this species in the Sarawak Museum Catalogue p. 82. Fish of Ceylon by Kelaart

Serranus tawina

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als no 21 to 49

Mexico No 461

B. 7; D. 11-11; A. 3-5; V. 1-5; P. 19; V. 3, 1, 5, 7, 1, 3.

The head contributes nearly a third of the total length. The eyes are large, oval in shape, touching the upper line of profile, their greatest diameter entering five times in the length of the head, and more in advance of their own orbit. The hinder top of the maxillary is on a plane with the posterior limb of the orbit. The greatest depth of the body equals a fourth of the total length of the fish.

The dorsal fin commences above the base of the pectoral, the 3d or 4th of the latter, being twice the height of the first. There is a slight depression between the soft and spiny portion, which former is somewhat rounded off on its hinder third. The anal fin which is less than a third as long as the dorsal is rounded on its lower margin. The ventrals are as long as the base of the anal fin, and the large pectorals extend posteriorly as far as the vent, being as long as the caudal fin.

Color greyish or greenish-grey, with olive brown shades, and everywhere except beneath maculated with small diffuse olive-brown spots. Bridle brown. All the fins the same hue as the body, the soft dorsal, caudal and anal margined white.

Length 12 inches.

Hab. Kingsmill Isls.

13

Serranus tauvina

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Atherina millepunctata, Gunth.

B. 7; D. 11-16; A. 3-6; P. 1-2; V. 1; C. 16; L. l. 3-6; L. tr. 2/2.

This Atherina belongs to that section of the genus, characterized by its more truncate caudal fin. The greatest depth of the body as compared to the entire length is as two to seven; and the head comprises nearly a third of the fish. The eyes are rather large, sub-circular, superior in their upper line of profile and their area less diameter equalling two-ninths the length of the head. The hinder tip of the maxillary extends to a vertical touching the forward limit of the orbit.

The dorsal fin commences in advance of the base of the pectorals. Its first ray is half as long as the third, which latter is the tallest. A slight depression may be observed between the soft and spinous portion, the former being rounded off behind. The anal is short along its base, being only a fourth as long as the head, and arched along its lower edge.

Caudal truncate and slightly emargin-ate.

Color pale lilac, and every where profusely dotted with brown. Irides ebony with yellow. Pectoral fins yellow and immaculate. The basal two-thirds of the caudal, and the margins of the soft dorsal and anal, yellow. The basal third of the ventrals white, the middle yellow and the outer violet.

Length, 7 inches.

Habitat.- Kingsmill Isls.

Remarks.- At the above location we obtained two specimens of this species, which seemed to be rare. One, which measured 6 inches in length, and is represented in our drawings, differed slightly from the larger ~~==~~ which had the margins of the fins ~~broader~~ blackish, and the ventrals the same color as the body.

Serranus hoedtii

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17

Serranus tekna. Garrett.

B. 7; D. 7-15; A. 3-11; V. 1-5; P. 14; C. 3, 1, 5, 7, 1, 2.

Of this splendid species I have seen but one specimen, and am unable to give but an imperfect description. The colors were lost from the preservative and are in this specimen represented in this plate. The greatest depth is about one-fourth of the total length, excluding the caudal fin; the eye large, oval, its diameter entering the upper jaw 3 times. Under lip of the usual length, not extending beyond the upper lip or projecting in front of the eyes as slightly concave.

The fins are about the same shape as in S. nigrus, but the dorsal is more fully developed, and the anal is not nearly so much drawn out posteriorly.

Color in life scarlet-red, darker on the fins and the fore part of the body, and strongly marked with golden-yellow as represented on the plate. Color scarlet, reflecting golden. Dorsal fin brownish-orange at the base. The upper half of the first dorsal orange-red, and the rest of the fin pale orange-yellow.

becomes scarlet fruit terminally.

Length, 12 inches.

Habitat. Kaiapoi bush.

Remarks. All the above specimens
(except the first) are called "Tetrea".

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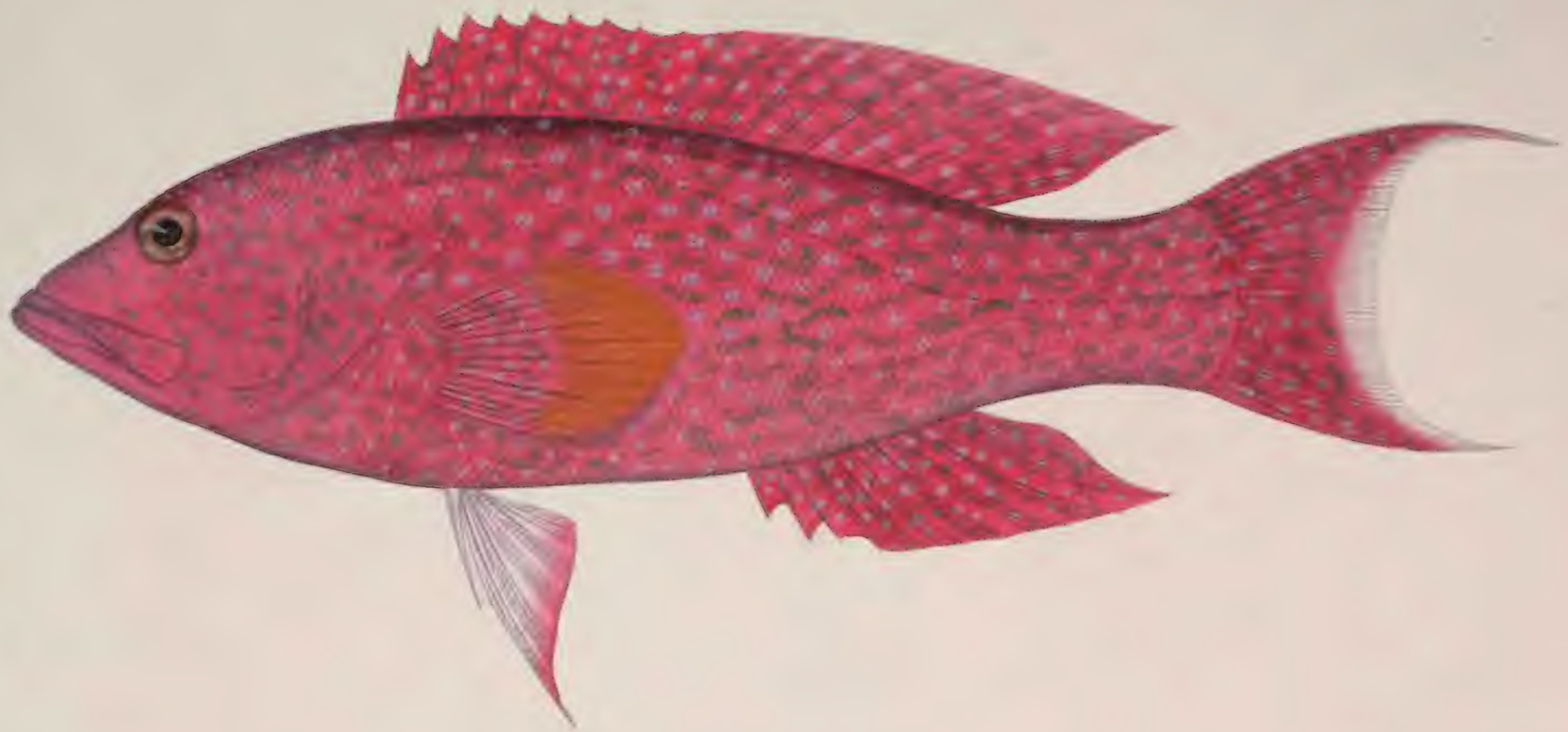

Serranus fl.

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P. maculatum.

Plectrogerma multiocellata, Garman.

D. 7; L. 7-11; A. 2-8; V. 1-5; P. 15; C. 1, 5, 6, 5, 1.

The greatest depth of the body is about one-fourth of the total length, and the greatest thickness is half the length of the head. The head is one-third of the entire length, caudal excluded. The eyes are oval, touching the upper line of profile, and their greatest diameter contains six times in the length of the head. Preopercle rounded and covered with three spines. The lower tip of the maxillary reaches a vertical line touching the lower limit of the orbit.

Color of the living fish bronzish or brownish-olive, paler beneath, and shaded with livid along the belly. The upper two-thirds, including the caudal and anal rather profusely ocellated with small round light blue or light green scallations on the brown or black areolae. Sides bronzish red.

Length, 3 feet.

Habitat—Panama to Lobos.

Remarks.—Said to be poisonous.

27

Plectropoma maculatum

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454

17

Plectrogenia No 454

D. v-15; A. 3-10; P. 1-5, P. 16; C. 2, 1, 6, 6, 1, 2.

Color vermilion red, paler beneath, head and body, except the belly and fins, profusely dotted with blue-black and light blue, the latter enclosed in black rings. Iridescent light red dotted blue. Pectorals dusky. Ventrals pale red dotted with blue-black rings. Anal finely pinkey-red dotted with blue, and blackish above. All the other fins light red becoming darker externally.

The specimen from which the drawing was made was captured in deep water outside the reefs at the Kingsmill Isls, and measured 16 inches in length.

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37

Plectropoma maculatum

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Genus Gramistes, Cuvier.

Body elliptically oblong, compressed. Head sub-conical, rather shorter than the longer bands of card-like teeth in each jaw, former much dilated and small finely ciliate in the superior part of the lower jaw. Preopercle armed with two or three blunt spines, and three flat ones on the opercle. Scales minute. Branchiostegal rays seven. The two dorsals are quite confluent; the posterior are the longest, and increasing in height posteriorly. The anal is short, with a single small anterior spiny ray. Pectorals small and but little developed. Ventrals in advance of the pectorals, and brought to the abdomen by posterior membrane.

Cuvier in his brief diagnosis of this genus in his "Règne Animal" says there is no sensible spine to the anal fin. It is indeed so small that it might be easily overlooked. Below I give a tolerably good figure of the species on which the genus was founded, and allude to the small spine in the text, which is also delineated in the figure.

18

Grammistes orientalis, Bloch.

Grammistes, Lebe, Mem., vol. 3, p. 75, pl. 27, f. 3.
orientalis, Bloch.
Syst. Ant., Mus. Ichth.
des Poiss., vol. 9, sup., p. 209, 29.
Perca bilineata, Bloch. Naturf. Berl. Mag. 11. p. 182, pl. 3.
B. 7; D. 8-9; A. 1-7; V. 1-5; P. 17; C. 3, 4, 7, 2.

The head constitutes just one third of the entire length, caudal excluded. The greatest depth of the body equals the length of the head. The diameter of the eye equals one-fourth the length of the head.

The anterior dorsal fin commences just behind the base of the pectorals, and extends quite close to the posterior fin. Its height as compared to its length is as one to two. The second spine is the tallest. The soft dorsal is posteriorly rounded off. The caudal fin, which is slightly divided, is about as long as the head. The fin above, equal the latter in depth, but is only half as long. Its lower margin is rounded.

Color deep brown or blackish-brown,

and [illegible] with white stripes, which vary in number in different individuals, and are more or less interrupted. Under surface pale brown, lower part of all the other fins are light red.

Length, 4 inches.

Habitat.—Kingsmill, Society, and Pavaita Isls. It also occurs in the East Indian seas.

Remarks.—This curious little fish seems to be rare in the South Seas. It may be at once determined by its brown color and longitudinal, slightly curved stripes.

Grammistes orientalis

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Body oblong, elliptical, compressed. Scales minute, covering all parts of the head except the jaws and interopercle. Head well developed, sub-conical. Mouth oblique, with a deep groove above jaw. Upper jaw longer, at symphysis furnished with a double-lobed flap. Band-like bands of fine teeth on either jaw, those on the latter. Preopercle armed with three flat triangular spines. Opercle with three spines. Branchiostegal rays seven. The two dorsals united at their bases, the spinous portion the longer, and deeper at the second ray. Anal shorter than the opposite fin, and furnished with three stout anterior spines. Ventrals situated just in advance of the pectorals, and their fourth ray is bound to the abdomen by membrane. Pectoral and caudal rounded.

This genus is dedicated to my friend and associate, Joseph D. Trask, of San Francisco, Cal. It is closely allied to the genus Grammistes, from which it differs in the well developed anal spines and the long spinous dorsal.

Gymnictis punctatus

19

Raskia maculata, Garrett.

D. 7; P. 8-12; A. 2-9; P. 14; C. 2, 5; 7, 2.

The greatest depth is one-third of the total length. The dorsal and ventral outlines are quite similarly arched. The head constitutes one-third of the entire length, caudal fin excluded. Eye large, sub-circular in shape, its greatest diameter entering about five times in the length of the head. The hinder tip of the maxillary reaches a vertical touching the posterior limit of the orbit.

A line drawn from the origin of the dorsal fin falls posterior to the base of the fourth ray. It contains only a little more than half as many as the second, all of which are entirely folded in the membrane. The second dorsal and anal are strongly arched, the former about the same height as the opposing dorsal, and both extensional. The ventrals have contributed left, and when closely depressed do not reach more than half way to the vent.

Color brownish [illegible]

ornamented with small irregular
shaped dark markings and small white
spots, which are smaller on the
head, breast and upper parts. A
large round spot just in advance of
the dorsal, a smaller one near the base
of the anal fins, one near the upper
caudal base, deep blackish-brown. A
small cordate shaped spot just before
the termination of the second dorsal,
a second larger one beneath the cau-
-dal half of the same fin, a very
large one occupying the middle of the
body, one beneath the middle of the
spiny dorsal, which dilates on that
part, all deep blackish-brown. A rounded
colored band crosses the interocular
space. Irides pearly-white. The
shiny breast colored and marked like
the body. All the other fins have
extremely delicate punctures and faint colored
bases.

Length, 5 inches.

Habitat.— Society Isls.

Remarks:— A single individual
of this rare fish was captured at
the above location. Its peculiar markings
will readily distinguish it.

Grammistes punctatus

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Genus *Mesoprion*, Gaimard.

Form oblong, elliptical, compressed. Head and body covered; jaws subequal. Head slender, acutely conical, and entirely covered with perforated scales. Branchiostegal rays seven. Dorsal and anal fins, covering the whole space between, a small notch in the interspinous region and origin of the second dorsal in the basal portions of the membranes. A depression between the spinous and soft portion of the dorsal fin; the former the longer. Anal small, not so near the caudal as the fin above. Ventrals inserted forward of the pectorals. Pectorals pointed. Caudal more or less emarginate.

These fishes differ from the genus Diacope in the absence of the subocular tubercle.

Diacope macerlei, Cuvier.

Diacope macerlei, Cuvier et Val., Hist. Nat. des Poissons, tome 2, p. 115.

Third of the distance between the snout and the end of the middle caudal ray. The greatest thickness, which is immediately behind the eyes, is considerably less than the depth just alluded to. The head, which comprises a fourth of the fish, exhibits a slight concave depression on the interocular space, otherwise the upper profile is arched. The eyes are large, subcircular, their diameter as compared to the length of the head nine and two tenths, and they are distant more than one diameter from the end of the snout. The maxillary does not extend back as far as the center of the eye. The teeth are fine, with a few small canine curvatures anteriorly. The general color is brown. The preopercle is dentated to the bottom and beneath. The dorsal, which

Elotherium insidiatrix, Cope.

B. 7; D. 10–14; c.l. 3–11; h. 1–5; f. 10; C. 5; 1, 6, 7, 1, 4.

The greatest depth, which is at the origin of the dorsal fin, is greater than the distance between the snout and the end of the anterior dorsal ray. The greatest thickness, which is immediately behind the eyes, is considerably less than the depth just alluded to. The head, which comprises a fourth of the fish, exhibits a slight concave depression in the interocular space, otherwise the upper profile is arched. The eyes are large, subcircular, their diameter as compared to the length of the head are as two to seven, and they are distant once their own diameter from the end of the snout. The maxillary does not extend back as far as the center of the eye. The teeth are fine, with a few small acute canines on the sides. The opercle flap is blunt. The preopercle is beautifully toothed down and beneath. The sides, which

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Sutter sinuous but deeply lanceolate.
All the fins are large. The
spinous dorsal which is longer than
the soft portion is erected a little,
the third or fourth ray the tallest,
the first about half as tall as the
third, and the portion of fin as nearly
as high as the first soft ray. The
soft dorsal, which is deeper than the
spinous portion, has the eighth or ninth
ray the longest and when laid flat-
down reaches the caudal base. The
anal grades gradually increase in height
to the eighth or ninth ray whence the ray
rapidly decrease in altitude so that
that portion is angulate. The anal,
which is about the same length as
the soft dorsal is deeper than long,
the sixth soft ray the longest, from
whence the fin rapidly tapers off owing
to that it is angulate in outline
to the fin above. The large scales
reach posteriorly and far on the vent.
The pectorals are subfalcate, very much
a little longer than the head. The
caudal terminates in its two long
lanceolate lobes.
Color of back; the olivaceous region

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[illegible]

mounted with dip or [illegible] large white or greyish white spots. A white subtish band extends from the head, through the median lobe of the body, and diffuses itself over the median fin lobes of the caudal fin. A second but narrower band starts from the throat and [illegible] at the hinder borders of the anal fins, finally passing obliquely towards the caudal fin. All the fins are deep black, the breast and ventral becoming shaded posteriorly, and the tips of the caudal lobes are white.

Length 10 inches

Habitat: Samoa I.G.

At the above locality, where I obtained a single example of this species, it is known as "Ja-ma-ma-a Ja-tuma" It is remarkable for the large size of its fins, and peculiar markings. The head is also massive, and the mouth seems larger than usual in the species inhabiting these seas.

Mesoprion macolor

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genus *Liacopa*, Lucas.

Body sub-elliptical, compressed. Head well developed, sub-conic. Eyes large. Posterior nasal aperture the larger, elliptical, the anterior one circular. Teeth conical, disposed in a single row in either jaw, the upper with the anterior and the inner with lateral caniniform sometimes there exists an inner band of fine card-like teeth. Mouth with an inferior deep oblique gape, jaws subequal. Preopercle margin denticulated and furnished with a spine which occupies a tubercle of the interopercle. Gills continuous under the throat. Branchiostegal rays seven. Scales of moderate size, more or less covering the opercular bones and cheeks, with exigenus coat exists on the bases of the vertical fins. The dorsal exhibits a slight depression between its spinous and soft portion, the former the longer, and most generally deeper than the latter. Anal short and deep, and more distant from the caudal than the ventrals from. Ventrals posterior to the pectorals. Caudal sub-bifurcate or emarginate.

Mesopleuron bengalensis

No 431 Gronow

Diacope semimaculata

B. 7; D. 10–14; A. 3–5; V. 1–5; P. 15; 6.3, 1, 7, 6, 1, 2.

In this Diacope, the scales are much more crowded than they usually are, and the superior profile of the head is curvilinear. The greatest depth of the body equals one-third of the distance from the end of the snout to the tips of the middle caudal rays, and the greatest thickness is a little more than half of the above mentioned depth. The head comprises about two-sevenths of the total length of the fish, and the hinder tip of the maxilla extends a little further in the anterior limb of the eye. The eyes are large, strongly oval in shape, superior and a little nearer the line of the profile, and their length is contained two and three-quarters times in the head. They are situated just over their own length from the end of the snout. The hinder vertical preoperculum margin is strongly dentated, the sinus deep and rounded, and the lower edge of the angle dentated. The tubercle is rather prominent and slightly hooked.

The dorsal fin commences in advance of the hinder opercle angle and the fourth spine, which is the longest, is hardly as tall as the first. The soft portion of the fin is shorter as less elevated than the spinous portion, and gradually diminishes in height posteriorly, where it is rounded off. The small anal fin is of dark colour and terminates nearly vertically posteriorly. The pectorals are large, and, like the ventrals, being as long as the soft dorsal, are of a rather dark hue, nearly black at the ends. The ventrals are long, pointed, dusky-fuliginous

cate in shades, the fourth as a, the longest which reaches as far back as the anal fin or a little more than the total length, caudal excluded. The caudal is bifurcate, the lobes triangular and about half the length of the fish.

The ground color of this species is dull yellow, darker beneath and characterized by a large oval diffuse black spot on the upper portion of the body. The lower line of the head and throat are of a coppery red tint and the muzzle is bluish purple. The flanks are marked with fine horizontal light blue lines with darker edges, the two ~~uppermost~~ ~~lowermost~~ curving upward on the breast of the dorsal fin; the third ~~begins~~ at the hinder base of the same fin, the fourth extends to the caudal which the lower or fifth extends to the hinder termination of the anal fin, and all are more or less continued over the head, bridles ribbony with a brown shade. The upper portion of the dorsal fin is ecterlen, with a dusky or smoky yellow margin, and the soft portion, together with the caudal are of the dusky tint but becoming reticulately tinged with yellow on its basal half and shaded with yellow and the lower colorless.

Drawing No. 4. Lizz.

Viti Islands.

21

Mesoprion bengalensis

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22

Mesoprion bengalensis

Diacope octolineata, Cuv.

Sciæna kammera, Forsk., Descr. Anim. p. 46, n. 40.

Perca octolineata, Schneider, Syst. Nat. p.

Sciæna kammera, Gmelin, Syst. Nat., p. 1222.

Holocentrus quinquelineatus, Bloch, 137.

Holocentrus Bengalensis, Bloch, 246, fig. 2.

Labrus 8-lineatus, Lacep., Vol. 3, pl. 22, fig. 1.

Diacope octolineata, Cuv. et Val., Hist. Nat. des Poiss. Vol. 2, p. 436.

Mesoprion etaape, Lesson, Voy. Coquille, Zool. Vol. 2, p. 224.

Diacope octolineata, Richardson, Rept. Brit. Ass., 1846, p. 229

" " Bennn. et Schl., Jour. Asia., p. 12, pl. 6, fig. 2.

B. 7; D. 10-15; A. 3-5; V. 1-5; P. 15; C. 3, 1, 5, 7, 1, 2.

The greatest depth of the body equals the length of the head, which latter is a trifle less than one-third of the total length. The eyes are large, sub-elliptical in shape, and about one-fourth as long as the head. The hinder termination of the maxillary extends nearly as far back as the center of the eye. The dorsal fin is not very deep, its fourth spiny ray

the tallest and the last portion is gently arched along its upper margin. The small anal is slightly arched and rapidly tapers behind. The pectorals are long, pointed, being nearly a fourth as long as the fish. The caudal exhibits a deep concave posterior emargination.

Color light greenish, or light yellow, passing into white along the lower parts. Top of the head and snout purplish brown. The upper half of the body is ornamented with four longitudinal bluish, reddish margined vittae, the three upper ones terminating on the base of the dorsal fin. All the fins more or less lively yellow, the dorsal margined with black.

Length, 8 to 10 inches.

Habitat.—Kingsmill Isls, Society Isls, East Indies, Australia, China, Japan, Mauritius, Reddea, Paumotu Isls.

Remarks.—If this species occurs at all the above localities it has indeed a wide range. At the Society Isls, where we procured the specimen from which our drawing was made, it is called "Iraafe", which Lesson uses for his specific name in this unsuccessful attempt to refer it to the genus Mesoprion!

Mesoprion bengalensis

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Macrourus gibbus
adult

Diacope Borensis, Cuv. et Val.

Diacope Borensis, Cuv. et Val., Nat. Hist. des Poiss., Vol. 2, p. 436.

Diacope tica, Lesson, Voy. Coquille, 3-ol. Vol. 2, p. 231, pl. 23.

Diacope Borensis, Richardson, Report Brit. Ass. 1845, p. 229.

B. 7; D. 10-11; A. 3-8; V. 1-5; P. 16; C. 3, 1, 5, 7, 1, 2.

The head enters three and a half times in the total length. A slight con-cave depression may be observed on the nasal region, between which, and the border of the orbit, the bone is arched. The lateral line is rather strongly curved. The greatest depth of the body, which is above the ventrals, is a little more than the length of the head. The posterior termination of the maxillary reaches nearly as far back as the anter-ior border of the eye. The eyes are large, oval in shape, situated a little nearer to the hinder angle of the opercle, than the end of the snout; their greatest dia-meter enters four times in the length of the head.

The dorsal fin arises immediately above the tip of the opercular flap, and passes over a space half the length

of the whole fish, caudal excluded. The first dorsal and anal increase their depth posteriorly, where they are acutely angu-lated. The tips of the pectorals are sub-falciform. The caudal is uniform with the tips of the forks rounded off.

Color of the living fish brick red, with whitish cloud-like spots on the lower part of the head and orange shades on the lips and round the eyes. Irides varied with ruby red and orange. The fins are rather darker than the body, the central portion of the spiny dorsal with paler clouds, and the other vertical fins tinged with blackish and more or less margined with white.

Length, 12 to 15 inches.

Habitat.—Society Isls, China, Paumotu Isls.

Remarks.—A somewhat common species at the former location. Lesson's specific name teea is the vernacular name of the fish at the Society Isls, when he obtained his specimens. His figure is faulty in color and general shape of the head and caudal fin. The native name should be written "Ta-ea".

Mesoprion gibbus

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Specimen in gibbus young

Diacope taca, Garrett

B 27; D. 10–14; ad. 3–8; A. 1–8; P. 17; C. 3, 1, 6, 7, 1, 2.

The superior line of profile from the end of the snout to the nape is con-cave. The length of the head slightly short of the greatest depth of the body, which latter does not go-te enter three times in the total length of the fish. The dorsal region is strong-ly arched, much more so than the ventral region. The eyes are large, sub-circular, approximating the superior line of profile, and their greatest diam-eter is about one-fourth the length of the head. The hinder tip of the maxillary passes a little posterior to the anterior limit of the orbit. Jaws even.

An line drooped from origin of the dorsal fin falls in advance of the base of the pectorals. Its spinous portion is well developed, deeper than its soft part and the latter is rounded off behind. The anal is sub-angulated posteriorly. The pectorals are large, and the caudal is sub-bifurcate.

Color greenish-white; sides of the head and the lower part of the body, coppery-red, the top of the former being brownish-red. The flanks are marked with close vio-laceous lines, which curve obliquely upward and backward. Sides orange red. The rays of the pectoral fins are pinky-red. Ventrals dusky red, with black tips. The dorsal and anal are dusky-red, shaded in the purple centrally, and margined with white. The caudal fin and tail, deep black-ish brown, the former narrowly, broadly margined with pale greenish. The blackish brown color disappears on the death of the fish.

Length, 7 inches.

Habitat.—Society Isls.

Remarks.—This elegant shaped species is rare at the above loca-lities, when it commences to resemble "Java".

Mesoprion gibbus

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25

Pectoral margin rotundatus

Diacope

B. 7; D. 10–14; A. 3–8; P. 14; V. 2, 1, 4, 4, 1, 2.

The greatest depth enters three and a half times in the total length. The head constitutes a third of the fish, the caudal excluded. The upper line of the head rises at an angle of about 45°. The eyes are very large, subelliptical, approximating the upper line of the head, and their greatest diameter is contained to the length of the head 3½ to one—to four. The hinder corner of the maxillary is on a vertical with the anterior limb of the pupil.

The fourth spine of the dorsal is the tallest and its soft portion is posteriorly rounded off. The anal is deeper than long, rapidly tapering behind so that the extreme margin is nearly vertical. Ventrals large and pointed. Pectorals elongate, subelliptical. Caudal concavely emarginate.

Color golden yellow, beneath the head and belly white, the two colors separated by an orange shade, and a few irregular shaped spots of the same color on the lower gill covers.

A tinge of green on the upper part of the body; chest, and the upper part of the head coppery-brown. Irides silvery, veined with dusky red. Dorsal fin vermilion red and dusky black above; its soft portion margined with white. Caudal brownish red and fins posteriorly margined with white. All the other fins lively yellow.

Length, 10 to 12 inches.

Habitat — Society Isls, Kingsmill Isls, Hervey Isls, Penrhyn Isls.

Remarks — A common species at all the above mentioned localities. Its vernacular name at Tahiti is "Doree"

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52

Mesoprion marginatus

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Diacope ?

Inscription below

B. 7; D. 10–14; A. 2–3; Pc 1–5; P. 17; C. 3, 5, 7, 1, 2.

The greatest depth of the body equals one-third of the distance from the end of the snout to the termination of the middle caudal rays, or about equal to the length of the head. The posterior termination of the maxillary does not reach quite as far back as a vertical passing through the center of the eye. The large eyes are oval in shape, their greatest diameter being two-sevenths as long as the head. The soft dorsal is rounded off posteriorly. The soft part of the anal tapers regularly away behind, and is rounded anteriorly. Pectoral sub-falciform. Caudal sub-bifurcate.

Color brownish red, with a dusky shade above the lateral line, where each scale contains a small sub-vertical elongate red spot. Beneath the lateral line darker lineations follows the longitudinal rows of scales. A spot just beneath the posterior termination of the spinous, and one beneath the end of the soft dorsal fin, faintly white. Sides of the head more or less

tawney yellow, or yellowish brown, the inferior fourth sample brown. Sides orange red. Spiny dorsal blackish, with a reddish tinge centrally, & all the other fins dusky red, with the tips narrowly shaded off with black.

Length, 3 feet.

Habitat— Societys, Isls. Paumotu Isls.

Remarks.— This large species, may be distinguished by the two dorsal spots, dull red color and black margined fins. The drawing and description are from a specimen 12 inches in length. At the Paumotu Islands they are never eaten by the natives, as they invariably, prove poisonous. At the Societys Islands I never knew of but one case of the natives being poisoned by them. At the latter group they are called "Hamea"

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Mesoprion bohar

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Pseudopriacanthus macrophthalmus

Mesoprion unimaculatus, Bleeker

Day, Indian Fishes, p. 57.

Lutjanus unimaculatus, Cuv. et Val., Hist. Nat. Poiss., Vol. 2, p. 201.

Mesoprion unimaculatus, Cuv. et Val., Hist. Nat. des Poiss., Vol. 2, p. 441.

" " Quoy et Gaim., Voy. Astrolabe, Zool. Vol. 1, p. 665, pl. 3, fig. 3.

" " Richardson, Rep. Brit. Ass. 1846, p. 229.

B. 7; D. 10–13; A. 3–8; V. 1–5; P. 15; C. 3, 1, 5, 7, 1, 2.

The total length of this species as compared to its height, is as four to one, and its greatest thickness equals half its depth. The dorsal outline is considerably more arched than the ventral. The head comprises about two-sevenths of the entire length. The eyes are large, oval in shape, and their greatest diameter enters about four and a half times in the length of the head. The hinder end of the maxillary reaches a little behind the anterior limb of the orbit. Seven or eight rows of scales may be counted

-tect on each cheek, and the supratympa-
-nic pocket contains six or seven scales.
A line drawn from the
origin of the dorsal fin, falls just
behind the base of the pectorals. Its
spiny portion is rather deeper than
the soft part of the fin, being much
elevated at the fourth ray. Its soft
portion is gently convex along its upper
margin and posteriorly rounded off.
The anal commences at a point oppo-
-site to the second soft dorsal ray;
its depth and length about equal and
its posterior portion rounded off. The
pectorals are falciform. The caudal
is deeply emarginate.

Color of adults, dusky red
above passing into light red beneath,
and white beneath the belly. Each scale
is marked with a small oblong sub-
-vertical reddish yellow spot. A large
oblong diffuse black spot on the lat-
-eral line, beneath the anterior half
of the soft dorsal. The upper part of
the head is black coppery red, sometim-
-es with an olivaceous shade; the lower
parts are coppery red with shades
of silvery. The spiny portion of the
dorsal is tarnished yellow, becoming

orange above; its soft portion is almost red, passing into orange above. All the other fins are more or less orange red.

The young are grayish white, the scales above the lateral line each with a yellow spot, and longitudinal lines of the same color beneath. The spinous dorsal steel-blue and yellow above, all the other fins pale yellow. The black spot is the most conspicuous in young individuals. It is often nearly obsolete in adults.

Length, 10 to 12 inches.

Habitat.—Kingsmill Isls, Hervey Isls, Society Isls, Paumotu Isls. East Indies, New Guinea.

Remarks.—We obtained this species in great abundance at the former location, where it is called "Tebaua". At the Society and Paumotu Islands where it is less abundant its native name is "Tai-ne-fa". Quoy et Gaimard's figure in the Zoological atlas of the voyage of the "Astrolabe" is very indifferent, and seems to have been drawn from a young specimen.

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Mesoprion gracilis, n.s.

Mesoprion n.s. #30

D. 7; D. 10-14; A. 3-8; V. 1-5; P. 15; C. 2, 1, 8, 7, 1, 1.

The dorsal region is more arched in its outline than the ventral profile, and the greatest depth of the body is about a third of the total length of the fish. The head in concave in its upper line of profile from the end of the snout to the occipital region, when it rises with a convex curve to the dorsal fin. The length of the head falls a trifle short of the greatest depth of the body, or nearly a third of the total length of the fish. The large eyes are sub-oval in shape, approximating the upper line of profile, and their greatest diameter equals a fourth of the length of the head. The hinder tip of the maxillary extends posteriorly to a vertical line cutting the centre of the eye. The preoperele is dentated on its vertical margin, and strongly so on its rounded prominent angle.

The dorsal fin commences over the hinder opercular angle and there is a slight emargination between the two portions of the fin. The spiny part which comprises two-thirds of the fin is not so deep as the soft portion. The

first spine is only half as long as the second and the third or fourth is the tallest. The articulated rays gradually increase in altitude from the first to the eighth, whence they rapidly diminish in height so as to exhibit a rounded margin. The anal fin is as deep as long, the fourth articulate ray is the longest, the others graduate either way, so that the lower margin is angulate. The ventrals are rather large, slenderly acute, and the pectorals are also large, subfalciform and reach nearly as far as the anal fin. The caudal is slightly concave.

Color brown fading into light reddish or copper red on the lower third. A blackish streak beneath the eye. Sides mixed with red and light brown, all the fins light reddish, the lower half of the ventrals and anterior body of the anal blackish.

Length, 7 inches

Habitat. Kingsmill Isls.

400

Mesoprion garretti

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Mesopristes semicinctus

1 Mesopristes sp. 460

B. 7; D. 11-13; A. 3-5; V. 1-5; P. 15; C. 1, 4, 7, 4, 1.
While collecting at the Kings-
mill Islands we obtained a number
examples of this beautiful fish, and,
though in too poor a condition for
description, yet we ventured to make
the colored drawing which is tolerably
correct.

The upper half of the fish is
olivaceous passing into reddish on
the lower third, and the top of the head
is of a purple black hue. A large black
spot marks the base of the caudal fin,
and several purple black narrow bands
descend from the dorsal region to near
the median line of the body. Fins orange.
All the fins are orange yellow becoming
paler outwardly.

Length of specimen 8 inches

Überschrift:

Journal des Museum Godeffroy. Heft III.

Fische der Südsee. Heft I. Taf. 17.

Unterschrift:

Mesoprion semicinctus

Zu schön Aufnahmen zu copiren

460

Mesoprion semicinctus

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Sinocyclocheilus sp. 438

B. 7; D. 9-14; A. 3-9; V. 1-5; P. 18; C. 4, 1, 8, 7, 1, 5.

This species of Sinocyclocheilus inhabits the Kingyunhill Lake, where it attains a length of 3 feet. The natives of that island call it Yen-chu-yu.

The upper third of the head and body is of a purplish black hue, which passes into light buff yellow beneath. Each scale in the former ground color contains a white dot, and those on the latter have dark purple dots, which assume the appearance of broken lines posteriorly. The lower part of the head is tinged light red. The irides are golden yellow, with a red circle next to the cornea. The top of the head is shaded with purplish brown.

The dorsal portion of the dorsal fin is dusky purple, with darker spots, and its soft portion is reddish purple edged with white on its upper margin. The caudal fin is also reddish purple, becoming darker posteriorly. The anal fin is yellowish on its basal half, the remainder blackish anteriorly and purple red posteriorly, the anterior portion edged white. The pectorals are light purplish red, becoming

much paler beneath. The ventral area
of a pinkish hue, shaded anteriorly with
light reddish, and the lower third blackish.

Mesoprion sp.

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31

Synonym: Prionotus vittatus, Goode & Bean

Pensacola cuta, Garrett

B. 6; D. 11-10; Ad. 3-6; A. 1-5; P. 17; C. 1, 6, 1; V. 1, 5.

The head which is flattened in its interorbital region, is less than and a half times in the total length of the fish. The eyes are circular in shape, situated nearly on the middle of the length of the head, and their greatest diameter as compared to the length of the latter is as two to eleven. The hinder extremity of the superior maxillary does not extend quite so far back as the eyes. The upper and lower profiles are gently and very regularly arched, both commencing at the chin and terminating at the base of the caudal fin. The greatest depth of the body is about one-fifth of the total length of the fish, and the thickness taken at the same point, equals two-thirds the above mentioned depth. The lateral line pierces over about fifty scales. On the superior two-thirds of the body the scales are lozenge-shaped in their imbrications and on the lower third they have their hinder margins rounded.

The dorsal fin takes its origin

immediately behind the base of the pectoral fins, and passes over a base half the length of the fish, caudal excluded. The spinous rays are slender, the first is only half as tall as the fourth, which latter is the highest in the fin. Its soft portion is half as long as the spinous, convex along its posterior margin and the last ray is slightly prolonged beyond its membrane. A slight depression marks the two divisions of the fin.

Color: the anterior half of the scales, metallic-green, their posterior halves steel-blue, the former coloration gradually becoming pale lilac along the lower third of the body. The upper half of the ventral portion of the head is greenish-brown, and pale lilac beneath. Iridescent. Basal half of the dorsal light green, bluish above and several blackish spots on the middle portion, caudal olivaceous. Basal half of the pectorals steel-blue, ventrals and anal light olive, the latter margined with violet.

Length, 26 inches.

Habitat.—Society Isls.

Remarks.—Its vernacular name at the Society Isls is "Euta". Rare.

13

Aprion virescens

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Genus *Pensia*, Garrett.

Form elongate-oblong, sub-fusiform, compressed. Head sub-conical; mouth with a moderate deep gape, oblique, the lower jaw the longer. Teeth conical, disposed in a single row, the anterior ones the largest, and there exists an inner band of card-like ones in either jaw. Scales of medium size, covering the cheeks and all parts of the operculum except the præopercle and lower portion of the interopercle. A small patch may be seen on the supra-temporal region. Lateral line concurrent with the curvature of the dorsal region. Branchiostegal rays six. Spinous portion of the dorsal deeper and longer than the soft. Anal small, shorter than the soft part of the dorsal, and placed more distant from the base of the caudal. Ventrals beneath the pectorals, the latter small. Caudal bifurcate.

The entire slender form, scaly cheeks, forwardmost lower jaw and deeply forked tail will distinguish these fishes from *Lethrinus*.

(Apsion) micracanthus, Jor. & Bell. (in part)

32 73

Pseudopeas Sandrichensis, Garrett.

B. 6; D. 10-11; A. 3-8; V. 1-5; P. 17; C. 8, 1, 8, 1, 1.

The head which comprises a fourth of the total length, is more obtuse than P. acuta. The body is a little deeper and more compressed, the thickness being only half the depth, while in the latter it is two-thirds. The eyes are larger, oval in shape and their greatest diameter is one-fourth the length of the head. The lateral line contains fifty-two or fifty-three scales.

The dorsal fin is shorter along its base as compared to the total length of the fish. The first spiny ray is less than a third as tall as the third one, which latter is the highest in the fin. The depression between its two portions is very slight. The soft part is a little more than half as long as the spinous.

Color of the dead fish sleaty blue-steel. Head tinged with light blue. Sides silvery-yellow. Fins nearly colorless, with the exception of the dorsal, which is mottled with olivaceous & blackish, the latter color like P. acuta, is confined to the middle third of the fin.

Length, 12 inches.

Habitat.—Sandwich Isls.

Remarks.—We obtained two specimens of this rare fish at the above location. It may be distinguished from Pontes by its more compressed body, larger eyes, more obtuse snout and different shaped scales.

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F3

Aprion virescens

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Family Menidae, Swains.

This family may be distinguished from the preceding ones by the extreme inequality of the two jaws, which is owing to the middle of the intermaxillary peduncles which are between the orbits. In some instances these exist to both sides of the mouth and distinguishes in the fore-parts. In external characters they resemble the Sparidae in which family they were formerly placed.

Genus Smaris, Cuvier.

Body oblong-elongate, rather small, covered all the upper parts except the fore-parts; cheeks scaly; a patch on the supra-temporal region and opercles scaled. Lateral line concurrent with the upper line of the body. Head small depressed, sub-conical, rather pointed. Mouth with a slight oblique gape; lower jaw the longer; teeth fine subulated in a band. Upper and lower immersed. Dorsal long, elevated anteriorly, tapering backward and nearly equally divided in its two portions; its spinous slender, scarcely visible not so far back as the pinnate. Pectoral posterior to the perforated. Caudal bifurcate. Vertical sub-falciform.

Apharchus furcatus

Smaris Tahitensis, Garrett.

D. 10-11; A. 3-6; L. l.-s.; P. 15; C. 3, 1, 6, 7, 1, 2.

The general aspect is rhomboidal. Both outlines forming dorsal bar, nape and snout and terminating at the tail. The greatest depth of the body, which is immediately behind the pectorals, equals the length of the head, or three-fourths of the total length. The greatest thickness is to depth as one to two. The lower tip of the maxillary reaches a vertical line passing just behind the pupil of the eye. The prominent lower jaw projects the upper line of profile when the mouth is closed. Eyes large, nearly circular, their diameter being nearly a fourth the length. There exists nine longitudinal rows of scales above the lateral line, which latter passes over seventy-six or seventy-eight scales. The scales on the cheeks are nearly as large as those on the body, and disposed in eight oblique rows. About twenty-five may be counted in the supratympanic patch.

The dorsal fin takes its origin just one diameter of the eye posterior to the opercular corner and extends over a base

nearly one-third the total length of the fish. The first spinous ray is very short, not more than one-third as long as the second, which, together with the third are the longest in the fin. The whole fin tapers posteriorly to the last ray, which is double, and has its basal membrane prolonged into a filament which reaches nearly as far as the base of the caudal. The second spine is a little nearer to the caudal than the base of the caudal. The first spiny ray is minute, the other two very long and slender. Like the dorsal, the fin tapers backward, but is slightly concave, and the last ray is also filamentous.

Color bluish silvery, slightly greenish with yellow. Margin of opercle dusky. Dorsal dusky greenish basally, shaded with yellow above. Another fin nearly the color of the body, the caudal tinged faintly with reddish and the ventral and anal with yellowish.

Length, 14 inches

Habitat.—Beverly Bay.

Remarks.—During a residence of two and a half years at the above ground I saw but one specimen of this fish. The natives had no name for it, probably it may have been a stranger to the group.

83

Aphareus furcatus

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Genus *Centrocyttus*, Gill.

Body elongate, strong, compressed. Scales of moderate size, covering all parts of the head except the muzzle, interorbital space and praeopercle. Head deep-conical; lower jaw the longer, both containing each an outer row of stout conical ones and an inner band of villiform ones. Praeopercle denticulated, upper one armed with a small oblique spine. Branchiostegal rays seven. Tubes of the lateral line branched. A deep emargination between the spinous and soft portion of the dorsal, of which the former is the longer. Caudal forked. Anal with three small slender anterior spines and shaped like the soft dorsal. Ventrals posterior to the base of the pectorals. No ventral sub-elliptical.

This genus differs from *Centrocyttus* in that we have elongate bodies, larger eyes, branched tubes in the lateral line, structure of the teeth and shape of the fins.

Centrotriscis elegans, Garrett.

B. 7; D. 10–11; A. 5–6; V. 1–5; P. 16; C. 5, 1, 5, 7, 12.

The head comprises a little more than one-fourth of the total length. The eye is very large, longitudinally oval, and its length enters three and a half times in the length of the head. The hinder corner of the mouth is on a certain with the center of the eye. The greatest height of the body as compared to the total length of the fish is as one to four, and the thickness taken at the same place is more than half the above mentioned depth. There are fifty two scales in the course of the lateral line.

The dorsal fin commences at a point immediately behind the base of the pectorals. Its spiny portion, which deeper and longer than the soft, is united to the lower third of the latter part of the fin. The third spine is the tallest, which equals one-third of the length of the whole fin. The soft dorsal tapers posteriorly. The anal fin is shorter, of similar shape, and more distant from the caudal than

the fin above. When the ventral are laid back they reach no more than half way to the anal fin. The pectorals equal in length the base of the spinous portion of the dorsal, and their fifth ray is the longest. The caudal is deeply bifurcate

color light scarlet red,

passing into silvery white on the lower parts, which is more or less suffused with the former color. A vertical oblong dusky red spot on each scale, and a narrow diffuse yellow stripe follows the lateral line. Irides silvery, clouded with intense scarlet. The dorsal fin is clouded with the latter color on a colorless ground. The caudal is scarlet red. All the other fins have colorless membranes and scarlet red rays.

Length, 15 inches.

Habitat.—Sandwich Isls.

Remarks.—This fine species is not abundant at the above location. They are usually caught in very deep water.

? Serranid.
? Stelis marshi, Jenkins.

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Genus *Newcombia*, Garrett

Form elongate oblong, compressed. Head sub-conical. Scales small, covering all the operculum bones except the jaws; they also cover the cheeks and in part may be seen on the supra-temporal region; exiguous ones on the caudal fin. Eyes large. Gape of the mouth moderate, oblique, lower jaw the longer; teeth fine, subulate, disposed in bands. Preopercle denticulated. Opercle with a small flat spine. Lateral line tubes simple. Branchiostegal rays seven. A slight depression between the two portions of the dorsal; the spinous part the longer, distant more distant from the caudal than the fin above, which it resembles in shape, and preceded with three small, straight anterior spinous rays. Ventrals obliquely triangular, inserted just posterior to the pectoral. The latter fins are sub-elliptical. Caudal bifurcated.

Bowersia ulaula, Jord. & Locem.

35

Newcomtia violacea, Garrett.

B. 7; D. 10-11/ad. 3-5; A. 1-3; P. 17; C. 4/5-5/1/3.

The greatest depth of the body is about equal to the length of the head or a fourth of the entire length of the fish. The greatest thickness is a little less than half of the even rounded depth. Eyes very large, obliquely oval, their greatest diameter entering three and a half times in the length of the head and once in advance of their own orbits. The hinder extremity of the maxillary is on a vertical with the anterior border of the eye.

The dorsal fin commences immediately above the ventral spines and passes over a base three times its own height. Its third or fourth spiny ray is the lofti-est, being nearly twice the height of the first. Its last four rays before the last ray is forked considerably beyond the membrane. The anal is a little shorter, but otherwise considerably similar to the opposite fin. The pectorals are nearly as long as the head.

Color uniform, lighter beneath.

Top of the head pinkish brown.
Sides silvery, varied with brown. The
dorsal fin is outlined with yel-
low on a colorless ground. Caudal
violaceous. All the other fins colorless.

Length, 11 inches.

Habitat— Sandwich Isls.

Remarks— Only a solitary
example observed at the above location.

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Bowersia ulaula, Jad. & Peerm.

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Princeaps pisces carolinus, young

36

Priacanthus serratus, Jordan

B. 6; D. 10-13; A. 3-14; P. 1-15; V. 15; C. 3, 1, 3, 4, 3.

The head comprises one-third of the entire length of the fish, caudal excluded. The posterior corner of the maxillary does not extend back quite so far as the centre of the eye. Eye circular, its diameter entering twice and one-third in the length of the head. The greatest depth of the body is about one-third of the total length.

The dorsal fin commences a little in advance of the origin of the lateral line, and rises to a base equalling nearly half the length of the fish. The spinous portion is much longer than the soft, and is the deepest at the fourth or fifth ray. The soft dorsal and anal are slightly naked, the latter extending over a base equal to that of the spinous dorsal. All the fins are rounded. The posterior angles of the caudal are slightly produced into points.

Color along the dorsal region light yellowish, passing into a light metallic purplish tinge beneath. The anterior portion of the body is marked with eight transverse silver-blue bands. The remainder of the body and head is mottled with

large irregular silvery spots. A small black spot marks the pectoral axilla. Inside silvery, edged with brown. The spinous dorsal is black-brown, darkly variegated above, and ornamented with numerous round black spots. The soft portion of the dorsal, anal and caudal are transparent and elegantly spotted with dusky. Ventral colorless. Pectoral flesh white and spotted like the dorsal.

Length, 3¾ inches.

Habitat.— Society Islands.

Remarks.— Only a solitary example of this interesting species secured at the above Islands. It may possibly be unique.

Priacanthus cardinus

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37

Fundulus carolinus

Diaeanthus notilosus, Gunth

B. 6; D. 10-10; A. 3-14; L. 1-5; P. 10; C. 2, 1, 7, 7, 1, 2.

The greatest depth of the body as compared to the total length is as 1 to 6 to seven. The head comprises one-third of the fish, caudal excluded. The eye is sub-circular, its diameter entering two and a half times in the length of the head. The maxillary extends as far back as the anterior limit of the cornea.

The general color is light brown, with large irregular pinky-white spots and clouds. Sides silvery, clouded with red. The vertical fins are spotted with round dark red maculations.

Length, 7 inches

Habitat. Society, and Fanning Islands.

Remarks. This species is not very abundant at either of the two above localities. At the latter location, where the specimen was captured from which our drawing was made, it is called by the natives "Sefan."

Priacanthus cardinus

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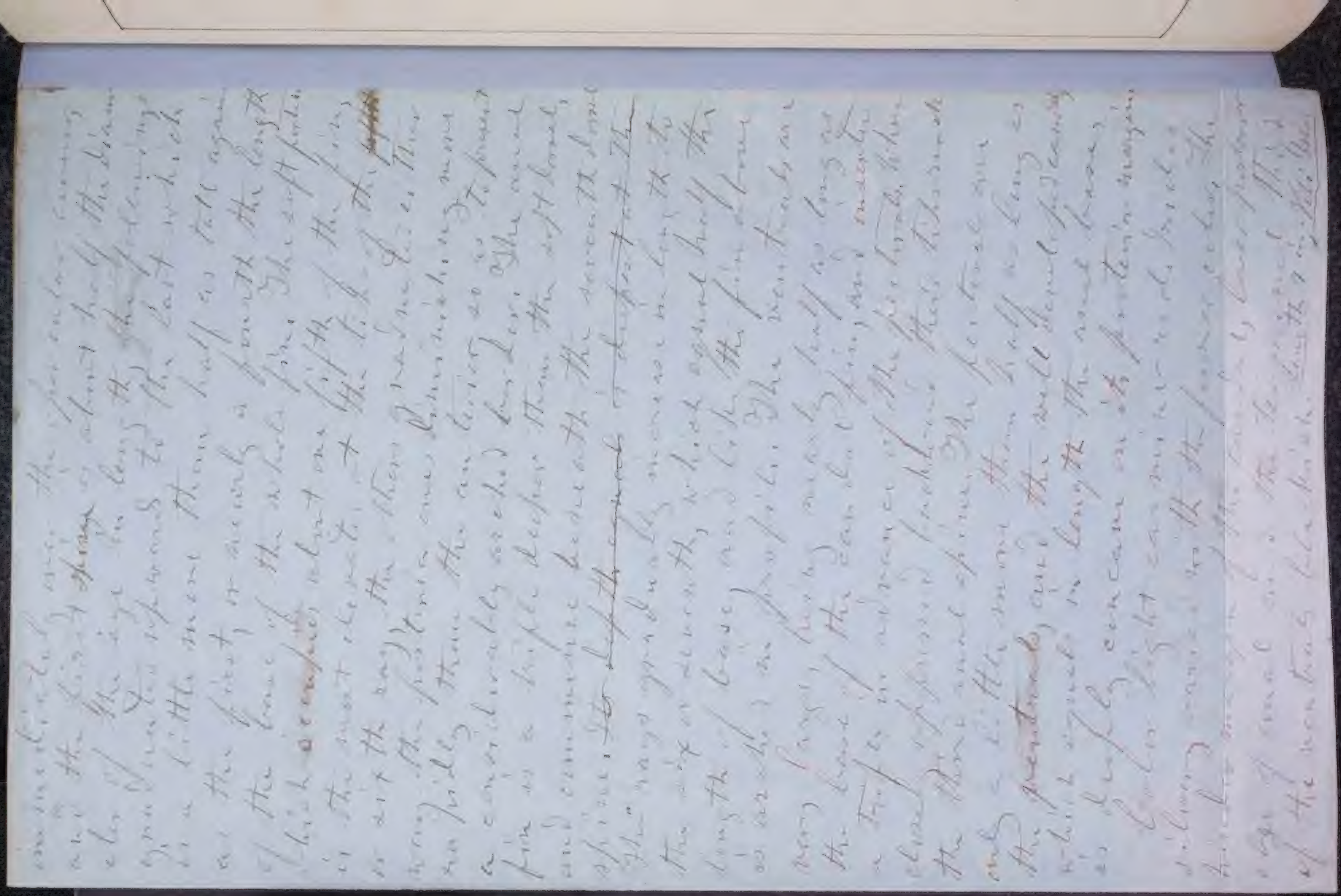
2 Priacanthus blochii Bl.

Priacanthus ~~blochii~~

B. 6; D. 10-14; an. 3-15; V. 1-5; P. 15; C. 3, 1, 7, 7, 3.

The dorsal region is gently convex from the end of the snout to the tail, and the interorbital space exhibits a slight depression. The mental barbel is considerably developed on the subdermal region. The greatest depth of the body, which is at the origin of the dorsal fin, is a little more than one fourth of the total length, and the thickness is one-ninth of the latter distance. The cheek, which rises up to the dorsal fin at an angle of about 30°, falls a little short of the fourth of the fish. The large eyes are subcircular in shape, their diameter three-eighth the length of the head, and situated over their own diameter from the end of the snout. The hinder corner of the maxillary is in a vertical touching the anterior border of the cornea. The subjacent margins of the praeopercula are serrated, denticulated, the angle obtuse, and terminating in a very small flat triangular spine, almost point, spine marks the hinder termination of the operculum. The jaws are armed with a narrow band of depressed conical slightly curved teeth, which are the most anterior in front. They also exist on the anterior part of the palatines, which also present a few teeth; the eyes, the posterior ones large elongated, the anterior ones small, and circular.

The dorsal fin starts from a point



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? Priacanthus blochii, Blkr.

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Genus *Sprogon*, Lacep.

Body short, subelliptical, transversed
Caudal trunk long. Scales large, more by
distorted, covering the cheeks and all the
opercular pieces except the præopercle. Mouth
rather large, subterminal. Eyes large. Jaws
even. Closely set villiform teeth in either
jaw, vomer and palatines. Præopercle with
a double plaited border. Branchiostegal
rays seven. The two dorsal fins separate,
of nearly equal height, rather deeper than
long, the spiny one opposite the abdominal
space; sub-triangular in shape, composed of
seven rays of which the third is the longest.
Anal similar, opposite and subequal
with the soft dorsal, the latter with one and
the former with two anterior spiny rays.
The ventrals are sub-pectoral, and inserted
beneath the pectorals. Caudal large deeply
ginate or slightly forked.

Color of the genus may be readily
distinguished by their short body, long
tail, large eyes and double plaited
præopercle. They are of small size, and
nocturnal in their habits. The absence
of long sharp teeth distinguishes it from
the genus *Cheilodipterus*.

8

Sphyræna pratensis, Les.

Sphyræna pratensis, Lesueur, Journ. Acad.
Nat. Sci. Phila., vol. 1, pt. 2, p. 199, pl. 9.
Cuv. et Val., Hist. Nat. des
Poiss., vol. X.

B. 7; D. 5-1-9; A. 2-9; V. 1-5; P. 13; C. 3, 1, 9, 6, 1, 2.

The head as compared to the total length is as one to seven. The eye is circular, its diameter equalling one-third of the length of the head, and it is set a little in the upper line of profile. The hinder tip of the maxillary bone extends about as far back as the center of the eye. The greatest depth of the body, taken at the origin of the spinous dorsal, equals one-third of the entire length, caudal excluded. There appear to be longitudinal rows of scales between the anterior dorsal and the vent, twenty-nine or thirty in the course of the lateral line, and three or four on the cheek. The caudal fin is obtusely forked.

Color more or less light brownish-red, generally passing into bluish-ash beneath. Dorsal margined with reddish-brown. A diffuse dark brown band starts from the end of the snout, passes through the eye, and extends to the base of the

conical form, each shield at more or less different stage of its development, one or two longitudinal, slightly curved ridges, but further obscure above the median row, both of which terminate at the base of the second dorsal. Sides divided in the sharp lumina and interspaces. The first dorsal black shading into yellow, or light olive, darker on terminal, sometimes nearly black at their junction with the other fins. Anal light purplish-red tinge, and the basal portion of the second dorsal and anal are streaked longitudinally with black and olivaceous-yellow or black and light blue.

Length, 5 inches.

Habitat.— Society Isls, Sandwich Isls, Kingsmill Isls, Navigators Isls, Feejee Isls, Guam, New Guinea.

Remarks.— This common species has an extensive range over the Pacific, having already collected specimens at the five first localities mentioned above. At the Society, Sandwich and Feejee Isls it corresponds to the "Uepaipu"

10

Apogon novemfasciatus, Cuv. et Val.

Apogon novemfasciatus, Cuv. et Val., Hist. nat. des Poiss., vol. 2, p. 154.

Lucy at Cairns, Gray cat. Fish., p. 344.

B. 7. D. 7-1-9; A. 2-8; P. 15; V. 1/5; C. 8, 1, 8, 2, 1, 9.

The greatest depth of the body, a little behind the first dorsal fin, enters three times and one-third, or a little more, in the total length. The head comprises two sevenths of the fish. The eyes are nearly circular, on a line with the upper line of the profile, and their greatest diameter falls a little less than one-third of the length of the head. The hinder termination of the supramaxillary extends scarcely so far back as the posterior limit of the orbit. The anterior dorsal fin has eight spines, the second of which is the longest, and the rest successively shorter. There are seven-teen scales in the course of the lateral line, which are smaller than the eye. Transverse rows, from the commencement of the dorsal fin to the lateral line, may be counted on the cheek. The caudal is deeply emarginate.

Color: female greenish-gray, with seven or ten longitudinal rows of brown spots, the lower four, three marked with four longitudinal dark brown bands, which are

Anterior dorsal fin interspaces. The first
two bands commence on the second, the
middle one finishing through the eye, and
all terminate at the base of the caudal
fin. The upper band traverses the second
region from the nape to the posterior ter-
-minations of the second dorsal fin. The interspaces
between the bands on the head are light
blue. The spiny dorsal is brown, becoming
much paler posteriorly. All the other fins
pinky-red, the second dorsal and anal
each with a diffuse brown basal shade
which tapers off posteriorly. Some specimens
have the fourth band along the abdominal
line.

Length, 4 inches.

Hab. tot. Kinzamilla Lake, Socotra, Isles.
Grosvenor.

Remarks. — Has obtained general appre-
-ciation of this beautiful species at the
Zoological Gardens, where it has lived for
two years. The snout is shorter,
the first two dorsal and the entire caudal
distinctly spotted.

Apogon fasciatus 8

39

40

Apogon fasciatus 9

Genus *Pterogeraspis*, Garrett.

Body short, deep, compressed. Eyes large, covering cheeks and preventing head except the forehead, which is depressed. Head with detached, obbreviately sub-conical. Eyes very large. Mouth moderately large, oblique. Jaws even, obliquely set with teeth in the jaws, vomer and palatines. Branchiostegal rays seven. Lateral line concurrent with the dorsal arch. Fins rather large. The two dorsals quite separate, of nearly equal height, the spines are triangular, supported by six each of which the first is nearly rudimentary. The second dorsal and anal spines to subdivisions rapidly tapering posteriorly, the former with one and the latter with two anterior spines. Ventrals beneath the pectorals. Caudal sub-bifurcate.

These fishes, like the true *Sparoids* are usually taken with hook and line in the evening. They may be distinguished from the latter fishes by their deeper body, larger scales, and different conformation of the dorsal, which has only six spines, of which the second is the tallest, while in the true *Sparoids* we find seven rays, and the third is universally the longest.

Sphagonopsis orbicularis, Kuhl et Van Hasselt

Sphagon orbicularis, Kuhl et Van Hasselt.

—— —— Cuvier et Val., Hist. Nat. Pois., vol. 2, p. [illegible].

—— —— Ruiz et Garin, Voy. Atra-bilis, Zool. 1, p. 648, pl. 1, fig. 4.

B. 7; D. 6-1-9; A. 2-8; P. 1-5; V. 12; C. 4, 1, 9, 7, 1, 3.

The form, which is concave along its upper profile, comprises about one-third of the total length, excluding the caudal forks in the measurement. The eye is very large, circular in shape, its diameter equal to half the length of the head. The hinder corner of the maxillary reaches a vertical passing through the center of the eye. The greatest depth of the body, which is at the origin of the first dorsal, equals half of the total length of the fish, caudal excluded.

The general shape of the fish can be best understood by considering the figure.

Color as copied from Ruiz and Garin's figure and text, is "yellowish-yellow, darker above where the former color fades. Fins light save on their outer borders.

Scribe yellow with brownish shades. A specimen now before me which is not very perfect, and has been some time in spirits exhibits the oblique dorsal bar and spots as represented by us in our figure. Dr. Gunther's figure shows the continuation of the band on the posterior half of the pectoral, which is quite obliterated in our specimens.

Length, 3 inches.

Habitat— Rockingham Bay, mid East Indies.

Remarks— The single doubtful Australian specimen from which our drawing and imperfect description were drawn, I procured at the former locality. Dr. Gunther's Australian specimens are from Port Essington. The figure, which is somewhat enlarged, is colored exactly from the above specimen and Australian drawing.

Pseudoscarus macrolepis, Bleeker, Verh. Batav. Genoot. Wet. Batav. Acad. Diss., pl. 1. fig 2, will serve as this species.

Apogon maculiferus, Gunth.

Proc. Cal. Acad. Nat. Sciences, Vol. 3, p. 105.
B. 7; D. 7-1-9; A. 2-9; L. l. 54; V. 13; C. 4, 1, 8, 7, 1, 3.

The upper profile of the head is slightly concave; otherwise the general shape of the fish closely resembles Apogon fraenatus, Val. The greatest depth of the body, taken at the commencement of the anterior dorsal fin, equals the length of the head or two-sevenths of the entire length of the fish. The eye is large, subcircular in shape, even with the upper line of profile and its diameter nearly one-third as long as the head. The upper jaw is slightly the longest, and the hinder termination of the maxillary is on a line with the posterior border of the pupil. The margin of the preopercle is finely and regularly denticulated, and its anterior crest or ridge exhibits but few irregular teeth. The lateral line may be traced over 24 scales.

The first and second dorsal fin are of equal length along their base, both being higher than long, and the altitude of the latter, which exceeds that of the former, is contained two and one-fifth times in the entire length of the fish, or two and one-third times in the length of the head. The anal fin is inserted a little more posterior than the fin above. The large ventrals when laid back cover the vent with their tips. The caudal is sub-bifurcate.

Color brilliant silvery with an iridescent reflection, in which carmine predominates. The upper two-thirds of the body is ornamented with longitudinal rows of small chinaceous spots, one on

each scale, and three above the lateral line more or less coalescing forming broken bands. The head which is more or less tinged with dilated carmine-red, is marked by a diffuse olivaceous band, which extends from the end of the snout, passing through the eye and terminating on the opercle. Iris dilute white, centre black. The membrane of all the fins are tinged with orange-yellow, and the cap red.

Length 5¾ inches.

Hab.—Sandwich Isls.

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Apogon maculiferus

Apogon orbicularis

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Genus: Cheilodipterus, Lacep.

Form elongate oblong, compressed. Body short, caudal peduncle long. Scales large, easily shedding. Head naked, scaleless. Eyes very large. Mouth with a cleft gape; jaws even; teeth fang-like with smaller ones intermixed, therefore overlapping the lower jaw. Preopercle simple. The two dorsals quite separate; the first lower than the second, composed of six slender rays of which the first is nearly as tall as the second. The third which are the tallest. Second dorsal much and concimilar, oblong, deeper than long and trapeziform; the former with and and the latter with two slender spiney rays. Ventrals obliquely four rayed and inserted beneath the pectorals. The caudal has a deep posterior emargination.

This genus is closely allied ~~to~~ the Apogons, but are more slender built, and have a simple preopercle. They differ in the structure of their teeth and the character of the first dorsal fins. Like the apogons they will novelties in their habits.

Cheilodipterus quinquelineatus, Cuv. et Val.

Cheilodipterus quinquelineatus, Cuv. et Val., Hist. Nat. des Poiss., Vol. 2, p. 167.

" " Lesson, Voy. Coquille, Zool. Vol. 2, p. 237.

B. 7; D. 6-1-9; A. 2-8; P. 12; V. 1-5; C. 4, 1, 6, 7, 1, 3.

The head is contained in the total length, caudal excluded, is as one to three. The greatest depth is two-ninth of the entire length, caudal included. Eyes circular, touching the upper line of profile, and their diameter equal to one-third the length of the head. The hinder tip of the maxillary reaches a vertical passing a little behind the center of the eye.

Color silvery gray, with brassy reflections in certain lights; sides with seven or eight rather feint brownish lines. Irides silvery with a brownish shade. First dorsal colorless, all the others have pale pinky-red rays.

Length, 6 inches.

Habitat.—Society Isls. Paumotu Isls.

Remarks.—Not common.

12
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Chilodipterus quinquelineatus

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Genus Dules, Cuvier.

Body oblong, compressed. Scales moderate, covering all parts of the head except the muzzle, interorbital space and præopercle. Head subconical. Eyes large. Mouth oblique, lower jaw the longer. Closely set cardiform teeth on the jaws, vomer, and palatine bones. Præopercle rounded and denticulated. Opercle with two spines. Branchiostegal rays six. A more or less deep emargination between the spinous and soft portion of the dorsal, the former being the longer. The anal is longer than the soft portion of the dorsal, extends more posteriorly than that fin and has three anterior spinous rays. Ventrals inserted posterior to the pectorals, and the last ray is bound by membranes to the belly. Caudal more or less forked.

Fishes of this genus are generally of a silvery color, and occur both in fresh and brackish waters, though mostly marine in their habits. Their flesh is much esteemed.

Dules macrolepidotus
Hott.

Dules malo, Cuvier.

Dules malo, Cuv. Hist. Nat. des Poiss., Vol. 2. p. 409.
Dules malo, Lesson, Voy. Coquille, Zool. Vol. 2.
p. 223.

B. 6; D. 10-11; A. 3-12; V. 1-5; P. 14; C. 4, 1, 8, 7, 1, 4.

The head of this elegant shaped Dules, constitutes a little less than a fourth of the total length, which latter equals four times the greatest depth of the body. The eye is sub-oval, its greatest diameter contained three times in the length of the head, and near in advance of its own orbit. A slight depression may be observed in the profile immediately above the eyes. The hinder termination of the maxillary reaches nearly to a vertical passing through the center of the eye. The dorsal fin extends over a base equal to one-third of the total length of the fish. Its spinous portion which is about the same height as the soft, is the deepest at the fifth ray. The soft portion, which rapidly tapers posteriorly, is united to the spinous part

for one-third of its own height. The anal fin passes over a base equal to the length of the head, and is from three gradually from the opposite fins. Caudal moderately forked.

Color in life; the upper parts contain lights of pale chrome yellow. The upper third of the body is marked with six other large irregular black spots. The scales on the dorsal are blackish margined. Top of the head brownish olive, ranged with fine, blue or green dark meandering lines. Sides silvery, ranged with brown. The vertical fins are shaded off with black-ish towards their margins. Caudal mark with large irregular blackish spots.

Length, 4 inches.

Habitat— Society Isls.

Remarks.— This graceful species is very abundant in fresh water at the Chain Groups, where it is generally known as "Vate". The foreign residents call them Fun'ti. Cuvier and Lesson's specific names are probably corruptions of the above native name.

Dules marginatus

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Duke, manuscript notes
for additional description
of specimens in museum
of Stanford University.

Duke No 3.

D. 6; A. 10-11; V. 8-11; L. 1-5; P. 14; C. 1, 1, 5. 7, 1, 1.

The head, as compared to the entire length of the fish is as two to nine. The eye is elliptical oval, its greatest diameter entering about two and a half times in the length of the head.

The spinous portion of the dorsal fin extends over a space equal to the length of the head, and the fourth or fifth spine is the tallest. The soft dorsal is not so deep or long as the spiny. The anal fin is not so deep as the corresponding one, but passes over a base one-third longer. When the ventrals are closely depressed to the abdomen their tips reach as far back as the vent. The pectorals are longer than the ventrals. The caudal is deeply forked.

Color silvery. Dorsal region dusky-blue. The top of the head is dark olive-green and marked with yellowish dermic tubular lines. Sides silvery and more or less clouded with brown; cornea deep blue-black. Fins nearly colorless, having most generally a tinge of steel-blue.

length, 10 inches.
Habitat.— Sandwich, Kingsmill and Society Islands.
Remarks.— At the former location this species is very abundant. It native name is "the holehole". Both drawing and description are taken from a Sandwich island specimen measuring 10 inches in length, which is much larger than any observed at the two latter locations.

45

Dules marginatus

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Dules argentus

Dules No 2

D. 6; L. 10–10; A. 3–11; V. 1–5; P. 14; C. 5, 1, 8, 7, 1, 4.

The general shape of this Dules is rather slender, and the caudal peduncle is very long. The greatest depth of the body is nearly a fourth of the entire length of the fish, and its greatest thickness equals half the length of the head. The lunar constitutes nearly a fifth of the total length, and its upper line of profile is slightly concave. The large eye is obliquely oval, its greatest diameter being one-third the length of the head.

The dorsal fin commences nearly the length of its own base distant from the end of the snout. The fifth spine is the tallest, which equals the length of the base of the soft portion of the fin. The other spiny rays rapidly decreasing in altitude either way. The soft portion of the fin is not quite so deep as the spiny, and is concave along its upper margin. The anal extends over a base equalling that of the spiny portion of the dorsal, and

is concave along its lower margin. The free space between its hinder termination and the caudal equals the length of its own base. The caudal is deeply forked.

Color silvery. Bluish-steel along the dorsal region. Dorsal fin steel-blue. The caudal is ornamented with five black fasciae, two oblique ones in each lobe which are broader than their interspaces, and a longitudinal one in the middle of the fin. The anal, ventrals and pectorals are colorless.

Length, 7 inches.

Habitat.— Kingsmill Isls.

Vernacular name "Jetiktin."

Remarks.— We obtained several specimens of this species at the above location. The long caudal peduncle and fasciae will readily distinguish this species. Both drawing and description were taken from an alcoholic specimen.

Dules argenteus

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Genus Thecacera, Thom.

Body oblong, compressed. Dorsal and ventral outlines forming a back, often with a fleshy crest or tubercle. Eyes lateral, the orbits confluent, forming a transverse groove. Mouth terminating in a short snout, and with the premaxillæ and dentaries toothless. Intermaxillaries suturally united, with an external row of slender canines. Branchiostegal rays six. Dorsal and anal fin in between the spinous and soft portion of the dorsal, the former the larger. Anal subsimilar to the soft dorsal. Pectorals a little posterior to the pectorals. Caudal bifurcate. (X Extinct genus both on marine and freshwaters)

Thecacera cornuta, Bloch.

B. 6; D. 11-10; A. 3-6; V. 1-5; P. 11; C. 3, 1, 8, 7, 1, 2.

The greatest depth of the body which is beneath the origin of the dorsal fin equals one-third of the total length, caudal excluded, and the greatest thickness equals half the depth; outline of the dorsal region is rather more arched than the ventral line. The head contributes nearly an fourth of the fish, and the large eyes, which are even with the upper line of profile, are subcircular in shape, their diameter entering three and a half times in the length of the head and once in advance of their own orbit. The hinder tip of the maxillary is in a line with the center of the eye. The two nasal openings are pierced just in advance of the eye, the latter on the larger one, and in that the hinder margin is strongly dentate

and the spreader, of which is well developed & strong denticulations may be seen on the hinder edge of the interspaces and on both sides of the processes, its first spine is very small, the second less than half as long as the third, which latter is nearly as high as the fourth which is the tallest in the fin. Posteriorly to the latter they rapidly decrease in altitude so that the tenth is no higher than the first, because the fin is emarginate near to its base. The eleventh spine is twice as tall as the tenth, though only as high as the first soft ray. The soft dorsal tapers which is concave above, tapers away somewhat rapidly posteriorly. The anal fin is shaped somewhat like the fin of a herring, but is deeper in proportion to its length, and more concave on its margin. The ventrals are large, slightly falcate, and when bent back do not quite reach the vent. The pectorals are rather small, and the caudal is forked, the lobes elongate triangular.

Color steel, steel blue along the back and white on the belly. The upper half of the fish is marked with three longitudinal bands, of a brown color, one along the upper side, one beneath, and one to ascend to the base of the dorsal fin, the latter two extending from the caudal and covering the upper & lower fleshy rays of the latter. Pectorals colorless, all the other fins white, the caudal with its oblong black tips, the dorsal, anal and ventrals tinged faintly olive, and the soft dorsal with three obscure black spots.

Length 8 9 inches

Hab. Gulf of Mexico.

Therapon servus

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Diagramma ~~microlepis, Smith.~~ Diagramma pictum (Thunberg)

B. 7; D. 12-20; A. 2-8; V. 1-5; P. 17; C. 3, 1, 8, 7, 4, 3.

The greatest depth of the body, which is as a line with the base of the pectorals, is two-sevenths of the total length, and the greatest thickness is half the above mentioned depth. The head, which constitutes nearly a fourth of the fish's length, is convex along its upper profile. The eyes are large, oval in shape, their greatest diameter entering four and a half times in the length of the head. The hinder tip of the maxillary reaches a vertical line touching the anterior limb of the orbit. The caudal trunk is slender.

The dorsal fin commences immediately above the hinder angle of the opercle; its first spiny ray is only half as tall as the second, the fourth being the tallest, whence they gradually decrease in altitude to the last. The soft portion, which is as high as the longest, increases in height posteriorly, where it is rounded off. The anal fin is opposite to the middle third of the soft dorsal; it is deeper than long.

and fronto-parietal in outline. The second articulated ray is the longest, and the first spiny ray is very short.

Color uniform dusky gray. The upper two-thirds of the body, head and vertical fins are further speckled and mottled with small diffuse blackish spots, darker on the fins, those on the body more or less inclined to assume irregular short streaks. There is a faint spot on the base of the pectorals, one on the base of the ventrals, reddish-brown. The interior of the mouth, the lips and dentures of the gill covers, scarlet-red. Irides varied with silvery, olivaceous and brown.

Length, 12 to 20 inches.

Habitat.—Society Isls.

Remarks.—I have seen but two specimens of this species, which is very rare.

Ueberschrift:
Journal des Museum Godeffroy. Heft
Fische der Südsee. Heft II. Taf. 21.

Inschrift:
Diagramma punctatissimum

Inschrift für den Beitext: Siehe Abbildung wie auf
Tafel 2.

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Diagramma punctatissimum

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Diagramma Motulense

B. 7; D. 12–22; d. 3–7; K. 1–3; Pl. 6. 5, 4, 3, 2.

No example of this species has reached before me, measuring 6½ inches in total length. The dorsal outline is much more strongly arched from the snout region, and the body tapers away from the base of the head to the tail. The greatest depth, which is immediately behind the origin of the dorsal fin, is a little more than a fourth of the total length of the fish. The scales are minute, and the lateral line is concurrent with the curvature of the back. The head contributes about two-ninths of the total length and is depressed in front of the eyes. The eyes are quite large, equal in diameter to about one-third the length of the head. The interorbital space is convex, and the bones of the margin along extend back on a plane with the anterior limit of the orbit, the latter being the longest bone forming the roof of the head. Both jaws bear villiform teeth.

The dorsal fin arises over the base of the pectorals and extends over a space equal to twice the length of the head. Its spinous portion is shorter than the soft part, the former the shortest, being almost eliminated at the third and fourth spines and is marked in outline as far as the commencement of the articulated rays, which latter gradually increase in altitude posteriorly, where the fin

is rounded off. The small anal is deeper than long and its lower margin is angulated at the termination of the third dorsal ray. The tips of the ventral do not quite reach the vent and are about the same length as the ventral sections. The caudal trunk is long, rather slender and the fin is large and forked nearly equally.

Color blackish white, the pickle blackish and the markings black. The latter can be best understood by consulting the figure. Fins the same color as that portion of the body where they arise.

Length 6¼ inches.

Mole Key West.

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Diagramma fuca

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Diagramma [illegible]

Diagramma ~~multifasciata, fos~~

B. 7; D. 2+16; A. 3-7; V. 1-5; P. 16; C. 3, 1, 8, 7, 1, 2.

The head, which is somewhat arched from the snout to the dorsal fin, comprises nearly a fourth of the fish. The greatest depth of the body equals one-third of the total length, caudal excluded, and the greatest thickness equals just half of the above-mentioned depth. The eyes are large, subcircular, their greatest diameter 4 in the length of the head are as three to seven. The interocular space is as 1 to 4 the length of the orbits. The pores on either side of the lower jaw are four.

The dorsal fin, which commences above the shoulder of pectoral angle, gradually tapers posteriorly as far as the first soft ray. The first spine being less than half as tall as the second, which latter is nearly as high as the third, the tallest in the fin. The soft portion is gently arched, less than as long as the spinous

[illegible] and is particularly sensitive. The anal is about half as long as the soft dorsal, about equal in height and length, the second soft ray the longest and the first terminating in a point by elongating in length, both lobes long, reaching more than half the distance to the anal. Pectorals as long as the dentals and subconic in shape. The caudal is truncate, with the angles slightly produced.

The ground color is silvery gray, closely punctated longitudinally with dark slate. The bands, about seven in number, are mostly broader than their interspaces, becoming fainter and narrower beneath, and all passing over the back except the two last ones. The upper profile of the head is tinged with yellow, the lips cream color, and the interior of the mouth and tongue a vivid red. Irides silvery, shaded with brown and olive. The dorsal fin is opaque white, the upper margin more or less brown, which on the spiny portion is separated and shaded off with yellow. The anus is also brown

fringed with yellow, and four or five
black bands, and with spots arranged
in a row marks the posterior third
of the fin. The anal is somewhat sim-
-ilarly colored, but there are but three
spots and the fin is more yellowish.
The caudal is yellow, becoming of
a cream color posteriorly, where it
is margined with brown, and profusely
maculated with rich black brown. The
bases of both fins toward the body
are marked with a blood red spot.
The pectoral has yellow rays and the lat-
ter is tinged with the same color exter-
iorly.

Length, 15 inches.
Habitat: Samoa Isls.
Of the above localities where
I discovered this species, it is called
"Pafaraka-Duduma"

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Diagramma lessonii

50

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Diagramma obscurum

Diagramma No 429

B. 7; D. 13-17; A. 3-7; V. 1-5; P. 15; C. 3, 1, 6, 7, ½ 2.

The dorsal region is more strongly arched than the ventral line, and the greatest depth of the body is not quite a third of the total length of the fish. The head comprises a fourth of the entire length and its upper profile exhibits a regular segment of a circle from the snout to the dorsal fin. The eyes are large, sub-circular in shape, and their greatest diameter enters four times in the length of the head and they are situated just over their diameter upward and backward from the upper lip. The jaw-cheek is rounded and its hinder margin is strongly serrated. There may be seen three pores on either side beneath the lower jaw. The teeth are crowded, card-like and disposed in bands.

The dorsal fin commences immediately over the hinder opercular corner and passes over a base nearly half the length of the fish. Its first spine is about half as long as the fourth or fifth which are the tallest, and from it a shallow cleft

emargination between the two portions of the fin. The dorsal fin which is nearly as deep as long, is higher than the spinous portion, but shorter on its base. Its upper margin is well arched and the tenth ray is the longest.

The anal fin is much deeper than long and tapers rapidly away behind, so that the last ray is no more than half as long as the antepenultimate ones. The large pectorals when laid back nearly reach the vent. The pectorals are elliptical in shape and the large caudal is slightly emarginate and the corners rounded off.

Color nearly uniform lamp-black, except a livid-red tinge beneath the head and throat. Inside of the lips blood red. Sides varied with red and brown.

Length 10 inches.

Hab.—N. Y. to Fla.

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51

Diagramma obscurum

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Genus Geres, Linnæus.

Form oblong, sub-elliptical, strongly compressed, particularly along the ventral region. Head well developed, sub-conical, eyes large. The two rostrils conspicuous being upturned and forward of the eyes. Mouth small, very protractile; lips fleshy, the upper one united by a frenum; teeth very fine, velvet-like disposed in bands. Branchiostegal rays six. Scales rather large, pectoral on all parts of the head except the snout & round the space between the eyes. Lateral line concurrent with the dorsal curve and composed of simple tubes. The dorsal and anal fins united with a scaly sheath, the former nearly equally divided in its two portions, and its spinous part deepest, & that shorter than the soft part of the dorsal. Ventral fins under the pectorals, which latter are long, pointed & four rays.

Genus figured

Genus . 1. 419

B. 6; D. 9-10; A. 8-7; A. 1-5; P. 17; C. 5; 1, 6, 7, 4.

This species is more elong ate, the head, round the dorsal outline extends as regularly each from the end of the snout to the base of the tail. The greatest depth of the body equals a fourth of the total length, the head is nearly a fourth of the fish. The eyes are large, subround, in shape and comprise three fifths of the length of the head. The teeth are disposed in villiform bands.

The dorsal fin commences at a point over the middle of pectorals, a little nearer to the end of the snout than the caudal eye. The first spine is very small and slightly curved, the second, third and fourth are strong, flattish, the second the tallest, its length nearly as long as the head, the last spine is shorter than the first articulated ray. The soft dorsal is nearly as long as the spinous portion and is slightly arched posteriorly.

The anal fin extends over a space equal to half the length of the head, and tapers away posteriorly, its depth anteriorly equals half the length of its own base, and the fin is a little more distant from the caudal than the fin above. The ventrals are half as long as the head. The pectorals are very long and pointed, the eighth or seventh ray, the longest, being a fourth the length of the fish. The caudal fin is deeply forked, the lobes acutely pointed and

fourth the length of the fish.
Color brilliant metallic-steely the dorsal region in certain lights ground with greenish, and the belly silvery. The central portion of the fins is with three or four longitudinal rows of oblong yellowish spots, which are best seen in the oblique light. Besides silvery tinged with olivaceous the fins are nearly colorless except a slight grass green tinge on the dorsal, and a slight dusky stain on the posterior margin of the caudal.

Length 12 inches.
Hab.— Key West.

419

Serres gigas

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53 77

Sparus Vaigiensis, Quoy et Gaim.

Sparus Vaigiensis, Quoy et Gaim., Voy.
Freycin., p. 192.

B. 6; D. 9-11; A. 3-6; V. 1-5; P. 15; C. 17, 6, 7, 14.

The dorsal region is regularly and well arched from the snout to the base of the tail. The anal arch is strongly depressed along the abdominal region. The greatest depth of the body, which is beneath the origin of the dorsal fin is two-sevenths of the entire length of the fish. The head comprises about two-ninth of the total length. The hinder lip of the maxillary touches a vertical line passing a little posterior to the front margin of the orbit. The large eyes are situated nearer to the end of the snout than the hinder termination of the opercles, in shape they are sub-circular and their greatest diameter enters their distance on the length of the head.

The dorsal fin commences a little posterior to the base of the pectorals, and extends over a long way nearly the length of the fish, caudal excluded. The front spinous ray is extremely short,

The second, which is the longest as the fin equals in height half the depth of the body beneath it base. The succeeding rays as far as the eighth rapidly diminish in altitude, so as to give the anterior part of the fin a sub-triangular appearance. The three posterior spiny rays are lower than the soft part of the fin. The soft portion of the dorsal is low, a little longer than the spine, convex along its upper margin and of nearly equal depth throughout. The anal fin is a little shorter than the dorsal, but rather deeper than the soft dorsal and tapers rapidly posteriorly. Pectorals sub-lanceolate.

Color brilliant silvery, which in certain lights reflects pale yellowish-white. Iris of the eye of a violet shade. Fins colorless.

Length, 8 to 10 inches.

Habitat—Kingsmill Isls Caroline Isls.

Remarks—At one period while we were collecting specimens at the former group, the Kingsmill Islands, these fishes, which were caught in great numbers, were fresh & delicious.

Serres fc.

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Scolopsis bilineatus
Pseudoscolopsis diplogrammus
bilineatus. Cyclus ! No 117 number depositor

Form oblong, compressed, depth about
rather large, covering all parts of the head
except the muzzle. Lateral line arched
consisting of branched tubes. Head mod=
erate, sub-conic. Eye large. Nostrils two,
approximating, a little in advance of
the orbit. Mouth rather small, slightly
oblique, protractile, and when advancing
descends; jaws sub-equal, armed with crowd=
ed exiguous card-like teeth. Opercle
armed with a single spine. Præopercle
lobed at its angle, which together with
the margin above strongly toothed. Sub-
orbital armed with large curved spines.
Branchiostegal rays seven. Dorsal single long
broad, emarginate between its two portions,
of which the spinous is the longer, tumi=
dal forked. Anal with three stout spines
and more distant from the caudal than
the fin above. Ventrals pointed to the
pectorals, which latter are subacute.

Species ? No

Scales 10-9 lines

B. 5; D. 11-8; An. 3-7; V. 1-5; P. 14; C. 2, 1, 6, 7, 1, 1.

The upper and lower outlines nearly
nearly similar, both gently arched, the

curvature being gentle regular from the snout to the tail. The greatest depth of the body equals one-third of the entire length, caudal excluded. The head constitutes nearly a fourth of the fish. Eyes large, their diameter entering three times in the length of side of head and are inserted a trifle nearer the end of the snout than the opercular. The maxillary bone extends back as far as the anterior edge of the orbit.

The dorsal fin commences a little posterior to the hinder angle of the operculum, and passes over a base half the length of the fish, caudal excluded. The fourth spiny ray, which is the tallest, equals about the longest soft rays. The soft portion is posteriorly rounded off. The anal is not more than one-third as long as the dorsal, or about half as long as the head, and like the fin above is rounded off posteriorly. The caudal is forked for about half its length. The pectorals are large, pointed, their tips reaching the root of the ventrals and the abdomen.

Color of a dead and probably faded specimen blackish above with a violaceous tinge on the dorsal region.

The scales on the lower third of the body, each with a small blue spot. Four light greenish silver bands, margined with umber, radiate upward and backward from the eye; the lower one traversing the shoulder and curves up toward the hinder portion of the spiny dorsal. The uppermost one curves upward and backward and follows the base of the soft dorsal to its hinder termination. The next one terminates on the middle base of the spiny portion of the dorsal. The fourth starts from the origin of the dorsal fin, touches the eye and passes over the interorbital space, and marks out follows the medial line of the head. Three brown bands proceed from the eye forward over the snout, and are bordered with light greenish silver, bands silvery with brown yellow shades. All the fins are transparent, with a slight brownish tinge, and the soft portion of the dorsal exhibits an orange margin.

Length 6 inches.

Hab.—N. Ti Isls.

Scolopsis trilineatus

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Family Sparidae, Cuvier.

The family, like the Serranidæ, have a feeble distribute of teeth. Their shape and position details of their organization are the same. They are all covered with cycloid scales of less large, but there are in their point except in some cases they always small on their caudal. They have no spines in their spinous fins. Their systems is furnished with caecal appendages. They never have more than six branchiostegal rays.

Genus Dentex, Cuvier.

Form oblong, sub-elliptical, compressed. Scales moderate, covering the cheeks, and operculum, except forepart. A small patch exists on the supra temporal region, and occipital crest on the caudal. Head sub conical. Mouth small, oblique; jaws even; lips thick. Teeth conical, in a single row, front ones the longer and howled; sometimes a patch of villiform ones occupy the end of the jaws. Branchiostegal rays six. A slight depression between the two portions of the dorsal, of which the spinous is the longer. The anal is as long as the soft part of the dorsal. Caudal forked. Ventrals pectoral in the females.

Topeus cuniculatus

Dentex lycogenis, E. T. Bennett.

Dentex lycogenis, E. T. Bennett, Proc. Zool. Soc., part 1, p. 127, June 1831

B. 6; D. 11-10; A. 3-9; V. 1-5; P. 14; C. 2, 1, 6, 7, 1, 1.

The greatest height of the body is a little more than a fourth of the total length. The head falls a little short of one-fourth of the fish, and is somewhat pointed. A slight ridge may be seen above the eyes. The eyes are very large, circular, their greatest diameter entering three times in the length of the head and once in advance of their own orbits. The hinder extremity of the maxillary does not quite reach as far back as the front edge of the orbit. There may be counted eighteen longitudinal rows of scales between the dorsal fin and the line of the belly, six of which are above the lateral line. The lateral line pursues about seventy-seven or seventy-eight scales.

The dorsal fin takes its origin above the base of the pectoral, and extends over a base half the total length of the fish, caudal excluded. The fifth spinous ray is the tallest, being

about one-fourth the length of the whole fish. Its soft portion is a little the deepest and terminated off behind. The anal tapers away posteriorly. Its ventrals overlap the vent.

Color of the dead fish, blue-steel. Beneath the lateral line four longitudinal yellowish stripes, which do not reach the caudal fin. Above the lateral line, several yellow lineations run parallel with the curvature of the back. An oblong, oblique, yellowish white spot marks the termination of the dorsal fin. The upper part of the head is olive, and the snout tinged with yellow. Sides silvery, with a brassy tinge. All the vertical fins broadly margined with black, and tips of the pectorals and ventrals pinky-red.

Length, 4 inches.

Habitat.—Kinzamill Isl, Society Isl, Harvey Isls, Penduster Isl.

Remarks.—The living fish differs much in coloration from the dead, being somewhat checkered with olive like bands. At the former location I collected "Bens" at Baltimore and "Maine"

Pentapus aurolineatus

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Genus Coesio, Lacep.

Body elongate, fusiform, compressed. Scales rather small, covering all the opercular bones except the praeoperculi; they also exist on the cheeks and on the supra-hyoidean region. Head well developed sub-conical; mouth with a moderate oblique gape; the lower jaw the longer; teeth disposed in villiform bands. Eyes large. At angle long tapering dorsal fin, whose anterior third is composed of slender, scarcely pungent rays. Ventral fins placed before the pectorals, with one spine and five rays. Anal nearly similar to the dorsal, and the fin is further removed from the caudal than the fin above. Lateral line continuous to the pectoral. Caudal bifurcate.

This genus comprises fishes which are gregarious in their habits, and may be known by their opercular spine-shaped bodies, which are not so deep as in Lutjanus.

Coesio fil

Coesio tile, Cuvier. 56

Coesio tile, Cuv. et Val., Hist. Nat. des Poiss., tom. 6, p. 424.

" " Lesueur, Journ. Acad. Nat. Sci. Philad., vol. 2, p. 181.

D. 11-21; A. 3-13; C. 1-5; P. 21; V. 1, 5; L. l. 54; L. t. 8.

The superior and lower outlines are quite similar, both curvatures commencing at the snout and terminating at the base of the caudal fin. The greatest depth of the body enters five and a half times in the total length, and the compression at the same point equals two-thirds of the above depth. The head comprises about two ninth of the entire fish. The orbits of the eyes are oval, their length about one-third as long as the head. The lateral line follows the eighth row of scales commencing from the dorsal fin.

The dorsal fin extends over a base which equals half the length of the fish, caudal excluded. Its anterior third, which increases more rapidly than the rest of the fin, equals in altitude one-fourth the length of the fin. The anal fin, which reaches over a base one-fifth of the total length of the fish, caudal excluded, takes

its origin exactly midway between the head and the base of the caudal. The length of the ventral fins and the height of the dorsal are about equal. The pectorals equals in length the anal base.

In color the upper third is blackish, and each scale smeared with a pale blue dot, and broad dusky black bands extend from the eye to the tips of the upper lobes of the caudal fin. Parallel and close to the black band is a bluish streak, which in the dead fish becomes more distinguished with yellow. The lower third is reddish, and in the dead specimen changes more or less silvery. Pectoral axillae indigo-blue. Sides yellowish-silvery clouded with ruby and blue, transparent, colorless, except a slight dusky tinge on the dorsal and a blackish streak through the lower lobe of the caudal.

Length, 6 inches.

Habitat.—Kingsmill Isls. Specific No.

Remarks.—The dorsal soft and black spine will easily distinguish this species of the former location we obtained them in abundance. Seven obtained this specimen at Apamama Island where it is called "Tile" by the natives.

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Coesio file var.

Coesio serie, Garrett

D. 12–21; A. 3–13; V. 1–5; P. 15; C. 2, 1, 5, 7, 1, 2.

The greatest depth of the body is a little less than one-sixth of the entire length, and the thickness taken at the dorsal fin is two-thirds of the above mentioned depth. Its upper and lower outlines are gently arched. The head constitutes about one-fifth of the entire fish, and is slightly depressed in the interorbital space. The eyes are circular, their diameter entering three times in the length of the head. The hinder tip of the maxillary is on a vertical line touching the anterior limit of the orbit.

The dorsal fin extends over a base nearly half the length of the fish; caudal excluded. It begins considerably backward from the first ray. The anal is nearly half as long as the dorsal and begins a little in advance of it.

Dorsal region olivaceous-slate colour; sides and belly silvery, glossed with coppery-red. Fins reddish. All the fins, except the caudal, ~~except the caudal~~, are orange, which latter is reddish with a faint diffuse dusky streak through

each lobe.

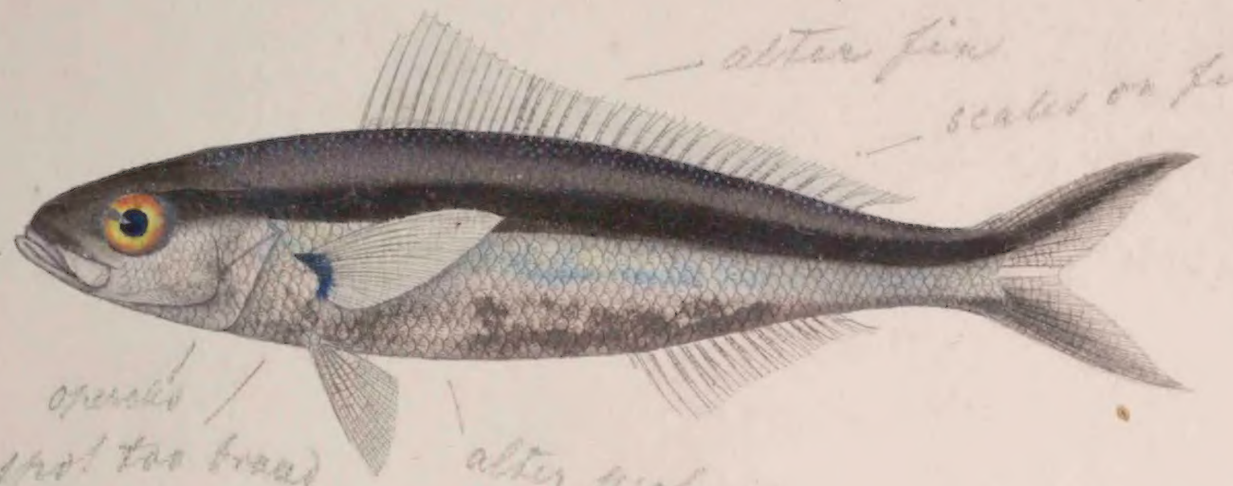
Length, 4 inches.

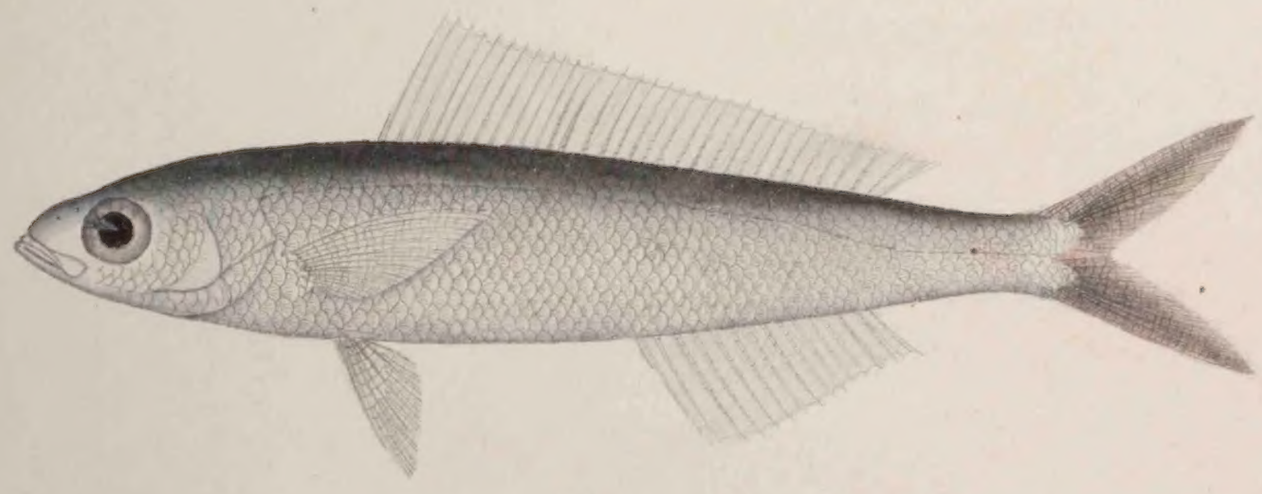
Habitat: Society Isl.

Remarks.—While I resided at the Society Islands I saw the natives destroying up this species by thousands. The natives assured me that in long years to come they did not like to see them in such numbers. Their vernacular name is "Aria".

Caesio tile

♀ from specimen figure too bad





Caesio tile

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Coccio argentea, Gill.

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58

Coccio argentea, Garrett

B. 5; D. 10-15; A. 3-12; V. 1-5; P. 18; C. 6, 1/8, 7, 1/4.

As compared with C. tilæ, it differs in color, the eye is nearer the upper line of profile, and there exists one more row of scales between the lateral line and the base of the dorsal fin. The latter fin is shorter in proportion to the length of the fish than in tilæ, and is also deeper. The anal fin is also shorter at its base and nearer the base of the caudal. It is more arched in outline than C. tilæ, and the shape of the fins quite different.

Both dorsal and ventral outline regularly but gently arched, the ventral line more depressed than the dorsal, and the greatest depth of the body enters nearly six times in the total length. The head constitutes about a fourth of the fish and the large eye bears about the same proportion to the length of the head; they are situated over their own diameter poster-ior to the end of the snout. The hinder tip of the maxillary reaches a little behind the anterior of the eyes.

The dorsal fin takes its origin immediately over the base of the ventrals, and extends over a base equal to half of the length of the fish, caudal excluded. The anterior ray is very short, not more than one-fifth as tall as the third which

is the most elevated, being about one-third as long as the base of the fin. The second ray is much taller than the first, but little shorter than the third from whence the fin gradually tapers backward, and preserves a slight concave upper margin. The anal fin is about two-fifths as long as the dorsal, co-terminates with that fin, twice as long as deep, and commences midway between the ventrals and the caudal fin.

Color in spirits silvery, and bluish ash along the back. Fins colorless.

Length 6 inches.

Hab.— Kingsmill Isls.

Taf. 24 Pimbleacott

328
58

Caenio argenteus

328

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